# The Builder.

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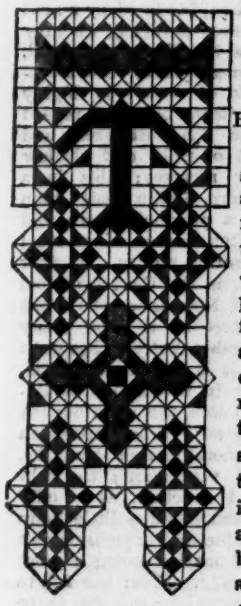

## *Bolton and its Town Hall.*

THE new Town Hall, at Bolton, of which we give plans this week,* and which is to be formally opened by H.R.H. the Prince of Wales on June 5th, will be completed by that date so far as the principal apartments are concerned, although in many minor points there will be a good deal still incomplete, the intended date of the opening having been unavoidably anticipated by a month or two, in accordance with the engagements of the Prince and Princess. The building occupies an exceedingly effective site, in what is called "Town Hall-square," with a wide area in front, and a very fair amount of open space on the other three sides: the buildings flanking this square are unfortunately, at present, of a comparatively mean and common type; and it is to be hoped that in time they will be rebuilt with such a degree of stateliness as to form a more suitable surrounding to the new building. We could scarcely recommend, however, the adoption of the same style or manner, for such rebuilding, as that which has been adopted in the Town Hall, which is the usual "school" type of Roman design, with an engaged order of columns or pilasters, running through two stories, and with the usual character of window-dressings, pediments, and so on. The symmetrical disposition of these features always gives, though not a novel, a stately effect, when arranged on a large scale, as in the present case; and the building will retain this effect, at all events until weather and time shall have told on it. We shall, however, give a view of the exterior next week, and our readers can form their own judgment.

In regard to the interior, the plan is in most respects praiseworthy, especially in regard to the manner in which the corridor communication is carried right round the building, as will be seen on the plans; which in other respects, as to the arrangement of the various compartments, will sufficiently explain themselves. The great deficiency is the want of what may be called a grand or "state" staircase in connexion with the main entrance. There is no lack of staircase accommodation, but there is no grand or effective route from the principal entrance to the mayor's state apartments. The basement is occupied by waterworks', treasurer's, and rate offices, and other municipal offices, and by the police accommodation and prisoners' cells; a large part of the basement under the great hall being utilised as a drill and muster room for the police force. This portion of the basement has to be lighted almost entirely by gas, but in nearly every other part of the offices the windows are ample, and the light is very good: the building being elevated on a very high rusticated base, this story is entirely above the ground, and the principal business entrances for the public are on the ground level, and very conveniently placed for access to those offices where the chief pressure of business will occur. The corridors and the floor under the great hall are fireproof (on Dennett's principle), the rest of the floors boarded. The first-floor corridor is laid entirely with Minton's tiles, in a simple and suitable pattern, forming a succession of panels; in the ground-floor corridor the same motive is carried out with the border tiles only, the rest being flagged, excepting the principal entrance and the corridor immediately adjoining, which is laid with a more elaborate tile design (not completed at the time our notes were made). The walls are finished with ordinary plaster, the principal rooms being decorated in colour. The roof of the great hall is (constructionally) an ordinary queen-post truss, the visible ceiling being formed by heavy coffered panels in plaster moulding and bracketing. The roofs are slated throughout with Velinhelli slates.

The large hall, without making much pretence to architectural grandeur, is a very cheerful-looking and effective room, as finished and decorated by Messrs. Simpson & Sons. The deeply-coffered ceiling, already mentioned, has an undeniably good effect on the eye, and its hollows and projections will serve to break up and disperse any echo which might have been returned from a perfectly flat ceiling when the hall was used for music; though it is matter for regret to see so much labour and material spent in mere lath and plaster cradling. A gallery, capable of accommodating two ranks of seats, runs round three sides of the room (very much on the same plan as what is called "the balcony" in St. James's Hall, Piccadilly), the under side of this gallery being bracketed out from the wall in the form of a cove, which makes the finish to the lower stage of the design, consisting of wall-pilasters and arcades. Above the gallery the wall is divided by shallow pilasters running from the surbase to the cornice, with the usual slice of architrave, balanced on the top of each pilaster, which seems inevitable in buildings in this style, and carrying an arcade which cuts into the cove of the main ceiling. The pilasters are made a good deal deeper against the end opposite the orchestra, with the view, probably, of breaking up a return echo. The space occupied by the orchestra (subtracting the large amount required for the organ), is not very great, and will not accommodate a band and chorus of adequate numbers (if this is considered a desideratum), but perhaps speaking rather than music will be the chief use to which the hall will be put. The room is calculated to seat an audience of 1,800. The material, hard plaster, with which the walls and ceiling are almost entirely finished, will make this a room with a decided tendency to echo, and rather reverberative than sonorous; but as the hall is not on the largest scale, this will not be so disadvantageous as it might otherwise be. The decorations of the walls and ceiling are in the main effective, though there is in this, as well as in other parts of the building, too liberal a use of gilding on the ceiling for refinement of effect; the best portions are the pilasters and wall panels of the upper portion of the room,—the former a deep red with foliated scroll ornament of a good type, and the latter diapered in gold on a warm cream ground. The treatment of the doors, with panels in black and gold on stiles of a warm morone tint, is very effective *per se*, but rather too pronounced for the rest of the work. Round the frieze of the hall are inscribed the following texts:—"Except the Lord build the house, they labour in vain that build it: except the Lord keep the city, the watchman waketh but in vain." "Blessed are the nations whose God is the Lord, and the people whom He hath chosen for His own inheritance." We confess to a conviction that the feeling of the said passages is singularly out of keeping with the style of their decorative surroundings, and to a decided dislike to see words which, if they mean anything, mean something very deep and serious indeed, thrown in as part of a decorator's ordinary stock-in-trade; with a more refined and intellectual style of design, they might go very well indeed. The figures of angels blowing trumpets in the spandrels are, on Messrs. Simpson's own authority, "boldly drawn" (whatever that may mean); we should be disposed to call them absurd. The semicircular windows over the cornice are filled with stained glass in panels painted in grisaille, furnished by Mr. Barnett, of Newcastle-on-Tyne; the work answers its purpose, but might have been better. The arches at each extremity of the longer sides, not pierced with windows, are treated as recesses occupied by four groups of plaster figures, each consisting of a female figure and two children, and representing the four Seasons; these are modelled by Mr. Paul, and though not "high art," are well-intentioned and pleasing. "Winter" is the best composed and most original. On the whole this hall may be characterised as a successful piece of ordinary decoration, appealing rather to the eye than the mind. We should mention that the surbase at the back of the gallery is faced by parquetry in various coloured woods by Messrs. Arrowsmith, who have also executed a more elaborate parquetry plinth and dado to the Council Chamber; the whole of this work is exceedingly creditable to them, both in regard to good taste in arrangement and excellence of execution. Above the parquetry wainscot the wall of the Council Chamber is decorated in panels with scroll ornament, and with a frieze above, with diaper ground on which at intervals are introduced small panels containing figures emblematic of various Bolton industries. The ceiling, which is divided into panels with a separate design in each panel, is the best part of the decoration here, and the best perhaps in the building. The decorations of the mayor's banqueting-room display again in the ceiling that over-use of what may be called "gilded vegetation," which is not in good taste, though it gives what is called a "handsome" appearance to a room; the rest of the decoration in this room is well balanced and effective, and the figures on the ceiling and frieze representing the "planets," the "months," and the "four elements," are some of them very elegant, and a great deal better than the "industry" figures in the Council Chamber. As to the "silhouettes of edible animals" round the walls, a whim in the decoration of dining-rooms which is becoming a fashion now, we should say that they were very fitted to amuse children, but out of place on any other consideration. The double columns near each end of this room are a warning instance of "constructed decoration." They stand on nothing below this floor, and carry nothing, not even a "soffit," but are planted straight up against the ceiling. The effect is not good. The Mayor's Reception-room (not yet decorated) may be made a very effective little chamber, considering its situation, plan, and lofty proportions; but it is deficient in light, its single windows being screened by the colonnade in front, an instance of the result of using southern styles in a northern climate. The Sessions Court is well arranged and well lighted, with two tiers of windows and a skylight of obscured plate glass, with embossed ornamental design. The various communications with the court, for magistrates, police, the jury, and the public, are conveniently arranged, and quite independent of each other. The business-rooms in general have an ample provision of light, and the corridors as much as is possible with the plan of building, and, on the whole, perhaps as much as is necessary. Each of the longer passages is commanded by a stair.

* See p. 426.

case window opposite each end, so as to give a through light.

The principal contracts for the building have been carried out by Messrs. Ellis & Hinchcliffe, of Manchester, whose work includes the ordinary particulars of a general building contract, with the addition of the approaches, which are being newly paved, &c., under the superintendence of Mr. J. Proctor, the borough surveyor. Of the external work we will furnish one or two particulars next week, when we propose to give the view of the exterior. The bells, including one large bell for striking the hours and four quarter-bells, are by Messrs. Warner & Sons. The clock, manufactured by Messrs. Potts & Sons, of Leeds, is from designs and plans by Mr. E. B. Denison. It will ring chimes at the quarters in a somewhat similar manner to the Westminster clock. The dials are 12 ft. in diameter, the centre-piece being 8 ft. diameter, in one casting of half-inch plate-glass: they will be illuminated at night. The whole of the internal decorations are, as we have said, by Messrs. W. B. Simpson & Sons, except the decoration of the corridors, which is by Mr. Heyes, of Bolton. The sculpture in the tympanum, which constitutes the chief external decoration, is by Mr. Calder Marshall. The locks and door-furniture are supplied by Messrs. Smith, of Birmingham, and are of excellent quality. The kitchen-range and tiling, and the grates and chimney-pieces on first floor, are supplied by Mr. Wilson, of Manchester; those on the ground-floor by Messrs. Pattison, also of Manchester. The tiling is entirely supplied, we believe, by Minton, Hollins, & Co.; but the only portion laid by them is that in the principal entrance: the rest has been laid by Messrs. Bournes & Son, of Leeds. The ornamental cast-iron work has been furnished by Messrs. Macfarlane, and includes a particularly good and appropriate pattern of stair-railing. The warming and ventilation of the building has been carried out by Messrs. Haden & Son, of Trowbridge, who have also supplied the hoists, &c. The great hall is warmed by hot air, admitted through perforations in front of the platform. This seems rather a one-sided (or one-ended) way of heating a large room, and would have a tendency to keep one end of the room too warm while the other is too cold. Perhaps the position for the inlet is chosen on the principle, that in rooms for hearing in, the system of admission and expulsion of air should tend in the same direction as that in which sound is to be propagated, and thus the words of the orator or the notes of the vocalist are to be borne on a blast of hot air to the furthest corner of the apartment. This is the only portion of the building which is warmed with hot air, the heat in the other rooms and the corridors being supplied (in addition to ordinary fireplaces) by a hot water circulating system and hot-water coils, which latter are liberally supplied, under the windows of the larger rooms, the banqueting-hall, council chamber, &c. The inlet for ventilation (besides windows) is by ordinary wall gratings, communicating with the rooms. The outlet for the great hall is through part of the small ornamental coffers along the margin of the ceiling, and thence into the main tower, which thus unites the useful with the ornamental, and becomes the principal ventilator. All the rest of the used-up atmosphere in the building is taken to four ventilating shafts which rise above the roof, over the four corners of the large hall, and form external features. These will have a hot-water coil inserted in them to insure a current upward. The water arrangements of the entire building have been supplied and carried out by the Bolton Waterworks Company, and by Mr. R. Hayworth, of Manchester, plumber, the supply including a 3-in. main for working the bellows of the organ by hydraulic pressure. Mr. Hayworth has also furnished the speaking-tubes, which form a communication between the principal rooms of the building. The fittings of the court and council chamber are supplied by Messrs. Dovestone, Bird, & Hull, of Manchester; the lightning-conductors and terminals by Messrs. Hibbert & Son, of the same town. The gas supply is laid on by the Bolton Corporation Gas Company (the corporation having recently become proprietors of the principal gasworks, originally a private enterprise), under the superintendence of their manager, Mr. Veevers; the chandeliers in the great hall,—eighteen in number,—are furnished by the Midland Architectural Metalworks Company, of Coventry, as also that in the mayor's reception-room; that in the Borough Court by Messrs. Messengers, of Birmingham; and those in the mayor's dining-room by Messrs. Wingfield, of the same town, who have also supplied the corridor lamps; the pendants and brackets in other rooms are also supplied by these two last-named firms. The organ is being built by Messrs. Gray & Davison.

The building has been erected from the designs and plans of Mr. W. Hill, of Leeds, Mr. Woodhouse, of Bolton, having acted as resident and assistant architect; and the work has been executed under the immediate superintendence of Mr. Jephson, as clerk of the works. The totals of the principal contracts are as follow:—

| | | |
|---|---|---|
| General contract | A = | £11,378 |
| | B = | 45,151 |
| | C = | 13,396 |
| Additional sum | | 200 |
| Approaches | | 1,784 |
| Bells | | 1,105 |
| Parqueterie | | 646 |
| Decorations | | 5,300 |
| Sculpture in Tympanum | | 1,000 |
| Grates, Ranges, and Chimney-pieces | | 896 |
| Clock | | 580 |
| Tiling | | 2,000 |
| Heating Apparatus | | 752 |
| Boilers and Hoists | | 360 |
| Lightning Conductors | | 150 |
| Fittings in Court and Council Chamber | | 1,130 |
| Organ | | 3,000 |

The total cost, including purchase of site, will be about 150,000*l*.

Having thus discharged our conscience of the business statistics in regard to the New Town-hall, we may be at leisure to look round us for a few minutes and notice anything else that may call for remark in connexion with the architectural aspect of Bolton. The general look of things is not, we must confess, either interesting or exciting; such "picturesque" effect as there may be in the older streets resulting rather from a general embrowned smokiness than from any more captivating qualities. The approach to Bolton, by the way, from the Wigan side, is by no means devoid of the picturesque, and the landscape is not so blackened and defaced as in the immediate vicinity of some other manufacturing towns. The street architecture, however, may certainly be pronounced, in the main, capable of a good deal of improvement. The principal architectural work of recent date is Mr. Paley's large church at the end of Deane's-gate, which derives the more effect from the sudden and rapid fall of the street here towards the east, leaving the church on a high-level promontory. It is a cross church, in the Late Geometric style, with a north-west tower of very dignified design and treatment, the detail of the upper portion verging more towards the later Decorated or Curvilinear style. The whole treatment is broad and simple throughout. The walls are entirely of ashlar masonry. The nave is lofty, and with a wide arcade on rather slender piers, giving a look of ample space. There is not a detail in the building, as far as we noticed, that is not repeated from Mediæval Gothic; but, as a specimen of modern Gothic of the "conservative" school, it is very good indeed. Besides this, the buildings by Mr. Woodhouse, already named as resident architect for the Town-hall, form the best items by far among the newer work. The Gas Company's Offices, closely adjoining Town-hall-square, is a very good building of the French Gothic type, of red brick, with stone bands. The windows are very well treated. The office portion is well discriminated from the mere working portion in the external design. The whole of the internal fittings are in good keeping, and are effective in design without ignoring utility. The front of Bradford-buildings, in Mawdsley-street, by the same architect, is another well-designed and effective red brick building. A new bank in Deanesgate is getting up, from the designs of Messrs. Cunliffe & Freeman,—a building of light-tinted freestone, with grey granite shafts, and showing a very good type of conventional foliage carving in the capitals, and other decorations; but the "style" is scarcely developed in the present stage of the building. Bolton possesses a park also, to be attained by a walk out to the north of the town, through very grimy and uninviting streets, and past waste land of a desolate-looking character; but the park itself is well situated on a slope rising from the banks of the small stream, the Croal, "upon" which the town is situated, or would be, if the stream were large enough for any town to be supposed to be situated on it. The park is well laid out provisionally; that is to say, there are the materials for a very pretty place, but it wants more flowers and ornamental gardening. The terrace along the top forms a fine promenade, affording a view not only of the smoke of Bolton, but on a clear day (as we were credibly informed) of the estuary of the Mersey in the distance. This portion of the ground is further diversified by a kind of temple or tribune, with pillars and arches in front, which forms a conspicuous object from the railway below, where passengers generally wonder "what it is"; but if they got out and came up the hill, they would be no nearer finding out. Returning along the Chorley-road (the "West-end" of Bolton, bordered by a neat type of houses, and neater gardens), we may notice a little off the road the Wesleyan Chapel, another of Mr. Woodhouse's works, the treatment of the west end of which is highly creditable to its architect, both in regard to the play of line in the buttresses, and the provision for effect of light and shadow in arches and window recesses; this is a better little bit of modern Gothic design than one often meets with in a provincial town, and we may congratulate Bolton on possessing a local architect of more than average ability. Further in, in St. George's-road, is the Congregational Chapel, by Mr. Oliver, of Newcastle, who is not unknown as the architect of a good many Dissenting places of worship, but who has done better things than this; it is too flat, and destitute of relief and shadow in reveals and mouldings. The market in Bolton, the main portion built a good while ago, is an excellent specimen (internally) of what a general market should be, in regard to light and ventilation; the fish-market, a more recent erection, is equally suitable in this respect, and shows a little more attempt at external architectural expression of a suitable nature; the old market being a mere "classic" screen externally. From the fish to the river is a natural transition; not that there is much connexion between them in this particular case, but it may interest the admirers of the great Thames Embankment work to know that similar schemes have been carried out almost simultaneously in other towns; and Bolton also has its embankment scheme. The river aforesaid, which "washes" the town of Bolton (no ordinary task), runs in a deep narrow channel through a part of the town, between the houses; that is to say, it "runs" now, but it appears that it formerly crawled through much mud, and in droughty weather approached to a state bordering on stagnation, endangering the health of loyal inhabitants on its banks. Whereupon the corporation of Bolton, with a wise consideration of the fitness of things, laid each of the banks with a smooth stone pavement, sloping down on each side, and leaving in the centre a deeper channel, down which, even in dry weather, the "silver Croal" now rushes in an impetuous torrent, at least 2 ft. wide. As to the "silver," however, that is but a poetic epithet, for the sewers discharge into it. Seriously, however, this embanking was the most sensible thing that could be done with the stream, and when there is a heavy rain, a most efficient "scour" is at once secured; and such a piece of sanitary work is none the less meritorious for being on a small scale. The question of sewage is being mooted here too, and its "utilisation," we understand, is to be attempted. But there our notes on Bolton must close for the present.

### REFERENCE TO PLANS.

*Ground Plan.*

1. Clerk of the Peace and Borough Prosecutor.
2. Magistrates' clerk.
3. Magistrates' rooms.
4. Sessions court.
5. Jurors' retiring-room.
6. Jurors' waiting-room.
7. Witnesses' rooms.
8. Ladies' retiring-room.
9. Ante-room.
10. Gentlemen's retiring-room.
11. Borough Treasurer's offices.
12 & 13. Borough Surveyor's offices.
14. Solicitors' room.
15. Barristers' room.
16. Large hall.
17. Staircases.

*First-floor Plan.*

1. Refreshment-room.
2. Waiting-room.
3. Grand Jury room.
4. Sessions court.
5. Committee-room.
6. Committee-room.
7. Mayor's parlour.
8. Council chamber.
9. Town Clerk's offices.
10. Mayor's reception-room.
11. Mayor's dining-room.
12. Spare room.
13. Upper part of large hall.
14. Staircase.
15. Lavatories, &c.
16. Place for organ.

**Munificence.**—Sir Josiah Mason, who has already built and endowed an orphanage at Erdington, near Birmingham, at a cost of more than a quarter of a million, has now arranged to erect and endow a scientific college in Birmingham, on which will probably be expended at least an equal amount.

## LINEAR PERSPECTIVE SIMPLIFIED.

THIS useful and comprehensive little book* is a translation of the work on Perspective which the *Ministère des Beaux Arts* in 1870 directed to be supplied to all the public libraries and schools of France, pursuant to a recommendation made in the previous year by M. Dumas, late Minister of Public Works, who then stated that the author of this work, M. V. Pellegrin, late Professor of Topography at the Military School of St. Cyr, "had been able, by dint of research and ability, to condense into a small number of pages the laws of perspective, and to extract from a confused mass rules which are very simple and easily applicable to every possible case." This kind of commendation in regard to a work of instruction, and the practical recognition of its value by Government, is not usually lightly bestowed in France; and we are not surprised to find that the work, small as it looks in bulk, quite bears out the character thus given to it. A treatise which undertakes to give all that the painter needs of the theory of perspective, and its application, within the compass of fifty duodecimo pages, and with the aid of one sheet of small diagrams, would be a welcome novelty to the student, and perhaps an object of some contempt to the teacher of perspective in this country. But we have always been of opinion that the study of this necessary technical branch of painting has been extremely hampered in English treatises by the want of a comprehensive and simple illustration of its leading principle, and by the multiplication of intricate diagrams and problems, which serve no purpose but to deter and mystify the beginner with a semblance of difficulties which really do not exist, the whole of the various problems of perspective including in reality nothing more than the application of the same rule to different circumstances,—an application which in many cases, instead of requiring a jumble of lines and figures to elucidate it, appeals, in fact, to nothing more occult than what may be termed ordinary common sense.

The author, avoiding geometrical problems in the first instance, goes at once into the practical question of the apparent sizes and proportions of figures on different planes of a picture, and gives simple methods of determining their relative height and scale; having contented himself with simply stating at the outset the broad problem of perspective to be, "to reproduce on a plane surface objects having the three dimensions *height*, *length*, and *width*, and to give to this plane surface (*the canvas*) the apparent depth of nature." What is to be noted in this portion of the treatise is the close connexion kept up by the author between the theory and the practical working out of a picture, which in many such works are kept so far apart that it is some time before a beginner is enabled to bridge the gulf thus fixed between theory and practice: indeed, M. Pellegrin almost assumes practice to take precedence of theory, for he adds that while perspective enables us to accomplish the object just indicated, "there is still necessary the first sketch of the picture,—the composition,—a work entirely of feeling, which the artist throws on the canvas, having nothing to guide him but his inspiration." A certain amount of *eye* for perspective, on the part of the student, is thus assumed in the first instance; and certainly, where this does not exist, it is probable that the most systematic instruction will be of little avail. The first section of the book having dealt with the treatment and placing of figures in a picture, the second and longer section is devoted to that class of problems which in England we are more accustomed to consider as "perspective," including the explanation of the rationale of "distance" and "vanishing" points, &c., which is given in a remarkably clear and simple manner; and without a single superfluous sentence. The whole of the problems and examples dealt with throughout the book are illustrated, as we observed, in a single sheet of twenty-four small and simple diagrams, all given on so many tinted spaces of similar size (about 2½ in. by 1¼ in.) supposed to represent the artist's drawing-board, and in which all the main points, as the base line, the horizontal line, the distance points, &c., are indicated in each diagram by the same reference letter, however their relative situations may differ, so that the comparison of one problem with another is much facilitated. In each case the diagrams are as typical (so to speak) as possible, and illustrated by the smallest possible number of lines, so that the fact of the universal applicability of the same principle in perspective is almost forced upon the student's mind; while, at the same time, the succinct brevity of the explanations, though furnishing all that is necessary, compels the student to think as he proceeds, and leaves him to acquire the art of readiness in perspective drawing in the only possible manner in which it can be acquired, viz., by the putting in practice for himself, in actual drawings, the theories which are here presented in their simplest and broadest form. Nothing could give a better idea of the thoroughly practical nature of this little book than the manner in which the author disposes, at the close of the work, of the question of lines which are not perpendicular to the plane of the picture, "as in a mountainous road, or the slope of a roof; the lines of these will terminate, as has already been said, in some point of the picture on a line parallel to the horizon. . . . . The theoretical determination of these lines is very simple, but I do not think it of sufficient utility to be sought after. It appears to me in this case that the perspective, estimated from sentiment only, suffices, considering that on whatever ground a building is situated, the walls are always vertical, and the lines of windows horizontal, as also the lines of tiles and the lower edge of the roofs; and that, consequently, the general rules are there for aiding the artist to correct any error he may have made in appreciating the perspective." There is much common sense, too, in the observation in regard to the supposed necessity for a technical study of the drawing of shadows, which does not, M. Pellegrin thinks, "form such an important part of perspective as might be supposed. In fact, would it be possible in any picture whatever to determine geometrically the shadows of the objects of which it is composed? And, further, would the result obtained, however mathematically correct, be real from an artistic point of view?" He promises, nevertheless, to endeavour to find a few simple and practical rules on this point to be added to the present work as an appendix. We do not hear whether this appendix has yet appeared; it is not added to the present English edition.

We regret to have to mention one serious drawback to the value of the present edition as a text-book in English schools; it has been very badly translated. We have not the French original at hand, but we have no doubt that so clear-headed a man as the author is wrote clear and intelligible French; many sentences in the translation are by no means clear and intelligible English, and it is quite evident in many cases that this has arisen from the literal translation of a French idiom instead of the substitution of the corresponding English one. The English preface is signed "G. D.," and we therefore presume that the bearer of these initials, as there is no other translator's name, is to be credited with the work. We know no more of "G. D.," than he does of French and English idiom, but we counsel the publishers, if a second edition of the work should (as we hope) be demanded, to have the translation revised by some one who understands both.

* The Theory and Practice of Linear Perspective, applied to Landscape, Interiors, and the Figure, for the Use of Artists, Art-Students, &c. Translated from the French of V. Pellegrin. London: Bickers & Son.

## ON TASTE IN COLOUR.*

IN rooms to be lived in, avoid simple white for colour of walls and paint (as in too many drawing-rooms); avoid also any extremely dark treatment. The walls of rooms should be such backgrounds as will best suit the complexions and dresses of the larger number of people. Delicate white intensifies by contrast any unpleasantness or want of perfection; extreme dark would make people look white and ghastly. Neutral colours will be found the best,—generally some gray or cool colour that will contrast with warmth of complexions. On no account let an absolutely pure colour be used for general surfaces. Nature provides no such colour in pigments. Her yellows are greenish or reddish, and so on. Nor does she use it to any extent in inanimate nature. So much so that you will find that if you have much difficulty in describing a colour, you may be certain it is good: the more difficulty the more beauty. Nature trusts mainly to gradations of tone, using vivid colour in small quantities only, as in the touches on bright flowers and butterflies. This teaching of nature will be found seconded in the pictures of the greatest artists, and in the good old decorated interiors of, for example, Italy and Flanders. In following such teaching, you will, however, need to consider the object to which (in domestic work, say) the rooms are to be devoted. A drawing-room, it is agreed, should be light, festive, and gay; a dining-room at once more sober, and with more depth and warmth, as befits its uses. You must also consider the light and shade; openings, and the positions of them; for these may (or may not) effect for you contrast of tone, and may even touch the question of the good sense of your whole scheme of decoration.

Mr. Wynfield gave suggestions for treatment of,—

1. *A Drawing-room.—Walls.*—A light neutral gray, fawn colour, or pale green (not dark, but not white). Dados are suitable for all rooms, even drawing-rooms. They may be made of wood, painted as the room doors, or of stamped leather, or of the French paper imitations of stamped leather. A frieze does not interfere with the heads of sitters, and adds much interest if it has its sentiment or story. If flowers form part of your decorations, have no relief, no imitation of Nature's light and shade. A wall must be a wall: if, neglecting this, you introduce illusions to the eye, the sense of solidity will not be suggested. The Japanese decorate on correct principles, with truth to the idea derived from nature, and truth in art, adaptation of representation to materials and method. *Woodwork.*—Have no graining anywhere; its aspect, however well executed, is repulsive. Real woods are always beautiful. Plain painting may be darker or lighter than the general wall surfaces; both will look well. The doors may have stencilled decorations in angles of panels—birds, or butterflies, or plants, or any beautiful natural objects will supply motives (a decoration used in rooms by Mr. H. S. Marks, Mr. Leslie, &c.). *Ceilings* should rarely be wholly white, except of halls or where the light is defective. Papered ceilings look well. The use of gold is generally satisfactory; it reflects a warm tone on everything below. Put a good amount of colour on a ceiling,—not, however, making it so dark as to bring it too close to the eye. The *Carpet* must be either lighter or darker than the walls. It is always lighter at a ball, where white dresses abound. This is following out the artist's rule, to make either background or foreground run into the figure. If this is not done in painting, a woman in white satin, for instance, against a dark floor and dark walls will look like a cut-out figure stuck on, and the same sort of result would occur in rooms. As in ordinary life, dresses are dark in colour; where a light wall tone has been recommended, the carpet will have to be darker than the walls. Not too vivid in colour, however, and, of course, no flowers, ferns, birds' nests, and suchlike fearful things. *Furniture and hangings* should not be too much alike in colour; have, say, the carpet one tone, the coverings of the furniture another, and the curtains and other hangings a third. Have summer and winter hangings and furniture coverings: those for the former light and cheerful, the others with more warmth, and suggestive of comfort and home life. A table-cloth, occasional chair, or a rug, may supply a bit of effective contrast with prevailing hues of hangings, &c., and a spot of vivid colour in a vase or some small hanging will complete the formal decoration of the room.

2. *In a Dining-room,*—used for its principal purpose mainly by gas or lamp light,—the living figures are seen in more detail around the lights. And decorated walls and woodwork will thus be sunk into the background among half-lights. More pronounced decoration will be allowable in consequence (and deeper, warmer tints are pleasanter here).

3. *As to Colour in Churches.*—The lecturer said, in answer to a question, that the application of distinct colour is not always a gain. He regretted at times, in revisiting cathedrals, the loss of light and shade,—the realisation of a vision or dream in purity of stone,—seen in visits aforetime. A building rich in varied forms often loses especially by applied colour. If colours must be used (and in cases where it is not thus out of place) pretty colours should be avoided; all violets, greens, and so on. Much of this sobriety in colour may have been safely and wisely dispensed with in the Middle Ages, when the dresses of the people and priests made the centre of the building a mass of brilliant

* Notes of an address by Mr. D. W. Wynfield, at the Architectural Association.

colour; but there is little colour from these sources in a modern church. And without this proportion,—this balancing of colour,—there must be failure. Proportion is at the bottom of all good colour,—of all beauty, in fact.

Mr. Edmund Sharpe, following Mr. Wynfield, urged, further, the avoidance of violent colour in church-decoration. The use of colour at all is very doubtful, where there is much play of form,—at any rate, where forms are abundant colour should be sparing. Probably, it should be confined simply to flat surfaces. In Lichfield Cathedral, in time past, when the colour was taken off the vault the sense of space was at once wonderfully increased. As soon (said Mr. Sharpe) as the vaults and dome of St. Paul's are painted and gilt, that charm,—that air and space,—giving St. Paul's an apparent height and size beyond St. Peter's,—will all be gone.

Mr. R. P. Spiers held by Mr. Wynfield's principle of using neutral tints, brightened here and there by bright points of colour. La Sainte Chapelle (Paris) and Notre Dame de Bonne Secours (Rouen),—two well-known examples of strong colour,—fail to satisfy,—especially in respect of the discords from the light passed through the strong stained glass. The buildings would have been more impressive (and pleasing) with the walls perfectly plain. In domestic buildings, ceilings with much colour seem doubtful. Some quiet colours on the cornice, and stencilled patterns to lead it into the ceiling, will connect all with the walls, and leave the pleasing sense of light and space. Horizontal lines, in the way of divisions to wall-space, augment the apparent size, including the height of rooms. The dado and frieze,—so uniformly done away with of late years,—are a real loss in this way. The Roman and Greek arrangement of a dado about 3 ft. high of dark colour, a lighter portion above, and a frieze about a foot deep under the ceiling, has much to recommend it. The division of the height of a room into two sections:—the lower section carried to, say, 5 ft. from the ceiling, of darker colour, used as a ground for pictures (pictures, rods, &c., above it), and the upper section lighter (a very deep frieze, in fact),—this arrangement is for some rooms even more suitable, and has a little more of the charm,—simple as it seems,—of novelty.

## ON RESULTS OF A RECENT INVESTIGATION INTO ANCIENT MONUMENTS AND RELICS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

THERE is a class of monuments in the Hebrides hardly noticed by previous investigators, upon which I have so far arrived at no power of definition; but, as my attention is still engaged on the subject, I venture to enumerate them amongst others, without connecting them with any of those I have undertaken to describe.

Their condition, arrangement, and appearances are so similar to what are described by Mr. E. H. Palmer, Fellow, of St. John's College, Cambridge, as found by him in the desert of Tih, that I adopt his words in describing them, though the description he gives is sometimes applicable only in part to some, and in part to others; but every feature in his description is to be found in one or other of the Hebridian relics, the natural physics of the localities also agreeing in description. After passing a place called Agúlah, he describes the wády he is traversing as finding "its way through a very narrow winding gorge, with grand precipitous sides, into Ain el 'Elyá." Here is a spring of running water, and the valley opens out into a large plain covered with hills and vegetation. Shortly after leaving this place we came to a group of nawámís, on the hills to the left of the wády, which were more perfect than any we had hitherto seen in the peninsula. They consisted of two detached houses, on separate hills, and a group of five on the side of a higher eminence. At least three out of the five were apparently untouched. Their dimensions averaged 7 ft. high by 8 ft. in diameter, but one was fully 10 ft. high and 8 ft. diameter inside. They were circular, with an oval top. In the centre of each was a cist, and beside that a smaller hole, both roughly lined with stones; these were covered with slabs of stone, over which earth had accumulated. Some human bones which we found in the cists at first led us to the conclusion that they were tombs; but the small size of the cists, and the evident fact that they had never contained perfect skeletons, proved that idea to be erroneous. In the smaller cist the earth showed signs of having undergone the action of fire, and in one or two small pieces of charred bone and wood were found. The country all round is covered with them, every hill-side having some remains of nawámís upon them. Close by the nawámís were some *stone circles.*" Time will not permit a recapitulation of the similar features in North Britain; but the curtailed tomb cist, and the place for cremative operation within a small structure, have been already before you, while the buildings themselves agree exactly in description with some of the detached as well as grouped dwellings in the Hebrides, as shown on the diagrams.

Of what appear to me monuments for sacrificial purposes, I beg to draw attention to mounds I have discovered in North Britain, having the distinct outline of animal forms, in some instances, indeed, quite as clearly defined as those in America, of which latter good illustrations will be found in the *Smithsonian Contributions to Knowledge.* In every case, so far, in which I have excavated these mounds, I have found human remains, generally accompanied with evidences of cremation, and in every case also with remarkable stone structures, often of large, or megalithic description. The forms are mostly serpentine, but in some cases fish-like; and, in some, approaching one of the figures of the American mounds, which resembled that of the winged sphere of Egypt. A natural deposit appears to have been generally taken advantage of, and either carved away, leaving the remainder in the form desired, or heaped up and added to for the same purpose. In some cases both these processes have evidently been resorted to.

Several of these mounds time has not yet permitted me to examine by excavation, and I have selected the more widely distributed, as well for my own comparison of the most distant with each other, as to allow the broadest inquiry. At the same time, on this point, I deprecate opinions formed by any who have only made a partial examination, and who may thus have come to a conclusion from the examination of any one specimen that may affect in their minds the whole question.

It must be remembered that Dr. Borlase discovered such a mound on Carnbre' Hill, in Cornwall; and this, together with the custom of planting such elevated spots, gives ground for supposing that others, perhaps not few in number, have existed in England, the features of which have been obliterated by such process, while the habit of altogether levelling is too well known by the recent cases at Stonehenge, and Dorchester, near Oxford, to say nothing of the noble preservation of relics in Wiltshire, by the liberality of feeling displayed by Sir John Lubbock, to leave any doubt that invaluable scientific treasure of this class has been destroyed in England.

This, indeed, has touched the very remarkable mound near Loch Nell, which is as distinctly in the form of the Egyptian Uræus as any of the sculptures in Egypt, the only deficient portion being that which could have been removed with the greatest facility, from its less important dimension, the *débris* still lying strewn on the most convenient spot, and the area so thrown open to the agriculturist facing the south-west, while the marks of the plough upon it are still visible, though betraying many years of disuse.

This mound is situated in one of the most secluded glens of the district around the triple-peaked mountain Cruachan. The well-known cry of the Campbells,—"It is a far cry to Lochow,"—intimating the remoteness and security from incursion of that district, we may naturally infer that here monuments of a Pagan religion might have remained unmolested when even the distant isle of Iona was subjected to spoliation.

The mound, as illustrated, shows to the west of the head a great cairn. The west was a direction peculiarly selected for burial with many ancient nations, as indicative of the course of the departed spirit, emblemed by the setting sun.

If, as I find reason to assume, mountains were distinctive features of adoration,—though, curiously enough, not included in the objects enumerated in a valuable work now publishing, "The Scottish Highlands: Scottish Clans and Regiments,"—then the position of the whole figure, which has clearly been connected with sepulchral, if not sacrificial rites, has the same tendency, being west of Cruachan; while a local Gaelic tradition asserts that persons were led to execution walking along the ridge to the head,—that is, east to west. These facts, together with the extremely important position of the mound as a theatre, the action upon which, of whatever character, could be seen by many thousands, have led me to the conclusion that it was an erection for sacrifice. When I first observed it, there was what appeared to me the remains of an altar on the summit; but the fragments now lie around which show some of the largest stones to have been reduced by blasting.

On opening it in company with a party of able scientific and professional men, we found a spacious megalithic chamber within; this was composed of *three* large blocks of granite, placed somewhat in the position of a triangle. In this were remains of bones reduced by cremation to very small dimensions, mixed with charcoal and charred earth, so as to require separation by washing. Amongst the charred vegetable matter were shells of hazel-nuts and some relics. A flint instrument was found here, a flake of chalcedony in an adjoining tomb, and a stone celt in another; the two former not being local materials.

I am impressed with the idea that there is still a chamber to the east of the large eastern block of granite, but the great chamber itself was a grand specimen of sepulture and cremation.

The spine of the form appeared to have been distinctly constructed of blocks of granite, and on each side these blocks had rows of smaller blocks, tapering away in reduced size as they receded from the main column.

The district for many miles has grand sepulchral remains, extending even beyond Berigonium and through Glen Lonan, towards Cruachan, a feature almost always attendant on the mounds of this class which I have discovered, and which are also in each case accompanied by what are generally called Druidical stones, either as monoliths or circles, or both.

This great serpentine form has also a serpentine avenue leading from its head, as shown in diagram B, while around the head is a partial circle of stones of the same kind, which puts beyond all question the connexion of the cairn and the reptile form.

The enormous labour displayed in the formation of the great cairn, or disk, formed of large boulders arranged with the greatest symmetry, and covered over with a uniform coating of earth, shows us that the constructors would not have left their labour unfinished for a little work by cutting away the mound, if the latter were no part of their design, so as to continue the circle of stones completely round, as is usual in such monuments; whereas they are complete, except where the disk fits on to the head. If simply a cairn were wanted, like others in the neighbourhood, any spot than the one selected would have been better.

In the particular case of this monument, it is remarkable that the locality round Loch Awe abounds in Gaelic legends of mythic serpents, the great Python of the neighbourhood being overcome by one Fraoch, who is also styled "Son of the Light," but who died from the effects of the encounter.

A similar mound was opened by me in the noble park of the Marquis of Lothian at Monteviot, in Roxburghshire. The form, though clearly shaped into an animal outline, is more that of a fish than a reptile. The plan and elevation of it are shown in diagram H, where it is placed in position for comparison with some of the American mounds. The noble marquis kindly gave me permission to inspect it, and also placed some fine Border lads at my disposal, under his intelligent master-forester, Mr. Weaver, who took great interest in the proceedings, the marquis himself giving me information which I was very glad I was in ignorance of before.

I was attracted to this mound (which has been shaped out of a natural water deposit) from its evidently manipulated form. When I obtained permission to excavate, the marquis gave me also some facts which relieved my only difficulty. Here at least there were no Druidical remains; but on my asking for the records of the estate to be examined to find if there was any mention of the mound having been worked in modern times, it not only appeared to have been unmolested, but a Druidical circle, bearing the name of "Harestanes," was reported as having been near this spot.

On digging beneath what appeared to me to have been the site of an altar, the ground was found to have been disturbed in a vertical direction beneath it, as the natural "walls" of the

* From a paper by Mr. J. S. Phené, F.S.A., read May 19th.

former excavation were found in their original state in each direction. No relics were found here. But I then adopted a plan I had used at Letcombe Castle, in Berkshire, and which was used subsequently at Maiden Castle in Dorsetshire, in which cuttings were made in directions south and east from the centre. The results of my excavations at Letcombe are given in the proceedings of the Oxford Architecural and Historical Society for 1872, pp. 2, 3, and 65; and those of the excavations at Maiden Castle, by the British Archæological Association, were fully reported in the *Times*, and in the "Journal" of that Association. In this case, nearly equidistant from the spot I had first selected, were found—one to the east and one to the south—a human skeleton; the bones were not burnt, but were in a similar condition to those at Letcombe and Maiden Castles. A mound near this, but on the opposite side of the Teviot, has a curious legend attached to it, as follows:—

"Forty paces from the Stabrie mire,*
Sits David Leslie in his golden chair."

David Leslie was, as we learn from Border minstrelsy, a leader in the Battle of Philiphaugh, and much too modern for my inquiries. There is, however, one feature of interest in connexion with his history, which rather tends to point out the locality I am describing as one retained in the memory of the old inhabitants as sacred, no doubt in connexion with the stone circle of Harestanes. David Leslie is represented, when in a dilemma, as being accosted by an ancient man, who, it would seem, abode near this mound, and who advised him how to operate so as to overcome his enemy, and by following whose advice he was successful. This aged man is clearly a mythic personage, as he is represented as figuring in fights over a period of more than 105 years,—from the Battle of Solway Flow to that of Dunbar.† No result attended the excavation into this mound, which I opened at the suggestion of the marquis, to see if any explanation of the legend could be found; but near it, somewhat to the northward, were the remains of a circular tumulus, with evidences of a small cist, like those I have described as in the Cumbrae tumulus.

While mentioning this locality, I can hardly avoid referring to the immense urn exhumed by me as the result of some fragments disturbed in ploughing‡ on a farm on one of the estates of Lord Lothian, in the same county, which is in the occupation of Mr. J. Shiell, who aided my search for the cistvaen. The urn I had the honour to exhibit, together with other British pottery at the *conversazione* of this Institute last year. Its unusual proportions, and the large mass of bones which had been subjected to cremation, show it not to have been the receptacle of the remains of a single person, and its position was so peculiar with respect to the conical hill, the Dunion, which stood between it and the triple-peaked Eildons, that I am impressed with the idea that it was a sacrificial urn.

Diagrams *Daleth* and *He* illustrate the last monument I shall mention. It is the last I have discovered of this class, and has the characteristics of a mound, formed out of a natural hillock distinctly shaped by labour, and an embankment which has been erected by material from the adjacent shore. It is at Skelmorlie, in the grounds of Mr. John Graham, on the estate of the Earl of Eglinton and Winton.

The embankment (now severed by a modern roadway) was originally about 400 ft. long, and the oval summit of the hillock 110 ft. from east to west, and 90 ft. from north to south. This, as well as the Great Cumbrae tumulus, lies westward from the grand Druidical station of Cuff Hill, near Beith, and the district had formerly a very ominous name,—"The dead man's yett,"—*i.e.*, "The dead man's gate." Due south of this is an interesting cromlech, referred to by me in the "British Archæological Journal" for September, 1871, p. 357. And the locality has retained to this day the features of some remarkable tradition, for to enter it has been said from time immemorial to be going out of the world, although the populous town of Largs is in the centre of the district. "Out of the world and into the Largs," the common expression, has no meaning in it, if "largs," as described by a single writer, though often quoted by others, means "slopes." There is no such word as "largs" in Gaelic, but there is Las'-ag, which, by the transposition of the *g*, becomes La(r)gs, the meaning of which is "flame" or "blaze," and agrees with the remarkable evidence of cremation this monument discloses. I dug down the sides of the hillock at the cardinal points to examine if the strata had been disturbed, and if any archæological features presented themselves. This labour was without result. I then continued the trenches on the summit, so as to meet in the centre; and at a depth of about 2 ft. came upon a paved platform 80 ft. long and 5 ft. wide, curved as a true segment, extending from the north-east to the north-west points of the compass, which, curiously enough, at that latitude form the points of the sun's setting and rising on the longest day. The platform had been intensely burned, and the earth beneath it, to a considerable depth, was changed by the action of the fire. The interstices of the stones, which latter were smooth sea boulders from the shore, were filled with charcoal and black earth; on washing the latter, abundance of small particles of bone were revealed. The victims must have been many to have covered an area of 400 square feet with the almost consumed remnants of their bones.

It must be admitted that, to those coming from a southern clime, the lengthening of the day in summer must have been the one object of note; and, on reaching such a barrier as the Clyde, I can well understand that progress might be arrested, while, if at Midsummer, the retrogression of the sun would be a hint to the wanderer to retrace his course, and the interval of the sun's disappearance on the longest day would be a matter of special record, and no doubt of sacrifice. I may state that the part of the hillock on which the platform is was quite unsuited for a beacon, being screened both to seaward and landward; in the latter case, by much higher hills. Time will not permit me to refer to some curious and useful purposes for which, I am sure, some of the monoliths I have examined in the north-west were erected; but that the effects which I observed could have been misunderstood by the erectors of them I feel is impossible: indeed, they must have been erected for the special purposes I found they fulfilled. Nor can I refer to the remarkable orientation of the dolmens and cromlechs in the north of Ireland, and at Ach-na-cree-beg, in Argyleshire, some of the features of which have been published in my papers, in the "British Archæological Journal," and in my lectures at Belfast and Paisley; but I cannot conclude the notice of sacrificial monuments without referring to a representation of one of the circles at Stanton Drew, in Mr. Fergusson's "Rude Stone Monuments." It will be seen at once that it forms an illustration of adaptation of the circle, with head and nimbus both formed by the position of the stones, and placed superior to a serpentine body formed by the either natural or artificial sloping of the adjoining ground, while, whether formed or selected, the position is again one of almost east and west, as also are those of Loch Nell, Skelmorlie, Monteviot, and, as far as I have looked at the bearings, of all those which I have noticed. Does it not appear that, while former antiquaries have endeavoured to place the stones of this monument in a position corresponding with their ideas of traditionary serpent-worship, the real design was overlooked, which was that shown in the diagram?

I cannot close the last portion of my subject without a glance at the historical evidence in favour of sacrificial monuments in Britain. Cæsar says the Gauls (*ergo* the Britons) "have figures of vast size, the limbs of which, formed of osiers, they fill with living men; which, being set on fire, the men perish enveloped in the flames."*

Cæsar, it is to be observed, gives no account of the form of the figures; but, as he informs us respecting a deity which he identifies with Mercury, on the ground, apparently, that he is a god of journeys, and of whom he says, "they have many images of him," persons have apparently jumped to the conclusion that the figures were representations of the human form,—I repeat, jumped to the conclusion, because the monstrous things sometimes represented as great wicker men, which could not have stood by themselves, and, if they did, would have tumbled down directly the torches were applied to the lower parts, certainly are not authorised by the text. But, as it is simply beyond belief that Cæsar could have stated this without foundation, it would be interesting if we could discover what he did mean. It appears to me the conclusions formed were near, and yet very wide of the mark. Strabo's statement that in these figures were "wood for fuel, and several kinds of wild beasts," clearly shows that the figure could not have been the basket-idol in our popular representation, but rather an arena. Now, if we can unite these two features, we shall probably approximate towards the mark, still more so if we can show that the two united come under the special description Cæsar gives of the British deity already mentioned.

In the immediate neighbourhood of Cæsar's land is such an image, 240 ft. high, and on so steep a slope of a hill (about 50°) as to look almost upright; this figure, fenced round in the manner customary with the Britons in their defences in the woods, and which is still retained in a more simple form by the hurdle-pen, in Sussex, would have represented an almost upright human figure, and at the same time an arena. Moreover, it would have agreed exactly with the word "*contexta*" as the "interwoven" work would have surrounded the limbs.

I think it will be found that in the gladiatorial shows of Rome beasts and men were not mixed till after pretty general knowledge of Britain and British customs had been acquired; and, as already pointed out, this custom is reported to have been found in Britain.

But the deity that Cæsar mentions as the one of whom the Britons had images is thus described by him,—"They consider him their guide in travelling and on their journeys, and believe him to have very great influence over the acquisition of gain and mercantile transactions." If, then, we find a figure having the former features, and also possessing the symbols of journeying, and placed, moreover, in the centre of that locality which had the greatest mercantile dealings with the Continent, we have, I think, a strong case.

An enormous figure, having all these characteristics, at Wilmington, in Sussex, has been erroneously attributed to the idleness of the monks of an adjoining priory, who, it is asserted, thus portrayed a *pilgrim*. It was not the result of idleness, for it is a device of great care and arrangement. It is not the work of the monks, still less a monkish representation of a *pilgrim*; for the monks would have considered the nude form indecent, more especially in a religious devotee; yet the staves indicate that it was a traveller, and to that extent it agrees exactly with Cæsar's description.

To this we may add that there is no known figure in Pagan mythology that agrees with that description; but its precise representation is found, and, I believe, found only on the gnostic gems, of one of which, for comparison, I give an illustration.

The Wilmington figure towers to an immense height; and when the spectator is only as high as the breast, on looking north, the whole of the country between him and the mid-Surrey hills is carefully commanded. The hill-side had been most fully brought to a surface, and the material so cut away thrown into a chine on the west, as shown by the section.

It was so formed that it would discharge the rain from its surface in every direction, probably the cause of its long duration. The head is above 21 ft. in diameter; and if the figure were kept clean, as in the case of the white horse in Berkshire, it could easily have been used for a day signal station, two of which, with the aid of the chalk, would be found enough to communicate even with London. But the whole district over which this figure towered was an enormous wood, sacred to two deities, known as Andred and Andras,—in other words, to the powers of nature. These deities are often described as one.

A wonderful stone in the park of Mr. Charles Hill, at West Hoathly, known as "Great upon Little," from the smallness of its base, has been traditionally connected with the worship of the latter deity, and I have little doubt it was so. This stone had till lately the autographs of Fox and Pitt upon it, and is in a beautiful, but weird and Druid-looking glen. This stone is shown on diagram Z, in comparison with one in Northern India; but the work of art at Wilmington tells more of the perfect idol, and its Colossus-like form speaks also of the great veneration of its designers for the object represented, and reminds us of the form of that at Rhodes, itself a great seat of mercantile transactions in its day. Even now, whatever were its former uses, it acts as an enormous gnomon, and at noon the

* A muddy stream of that name, forty paces from the mound.

† The Chandos Classics.

‡ The origin, also, of several of the investigations referred to.

* "Alii immani magnitudine simulacra habent, quorum contexta viminibus membra vivis hominibus complent, quibus succensis, circumventi flamma exanimantur homines."—B. vi., ch. xvi.

sun is exactly over its head, and the whole figure disappears, while the most casual observer could easily trace by the shadows, as they lessen and deepen in tone, the hours before and after noon. The gnostic gem shows the sun and moon in connexion with the figure; and it is strange that, while the surrounding heights, which comprise the Beachy Head range, are covered with British tumuli. The part of the coast near to the figure has an immense crescent or lunar-shaped embankment, generally called Roman, but which is certainly a British construction.

Numerous derivations have been suggested for the name or names of the deities, none of which appear to me satisfactory. The title seems, I think, compounded of the Celtic possessive pronoun *an*, and *dreos*. This expression would probably include both divinities, and signifies "*their blaze.*"

A British urn was lately found, almost at the moment of my last visit, on the farm of Mr. Thomas Lambe, with bones and charcoal; and large numbers of bronze celts and other British relics have been discovered from time to time at some distance from, but in full front of, the figure.

## SCHOOL-BOARD PUPILS AND COOKERY.

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It is necessary to be cruel to be kind sometimes, and if it were plainly stated, as it safely might be, that the best of a choice was presented, no silly doubts could be entertained of the justice shown, any more than the capability of judging could be denied to those whose troublesome task it is to make this choice. But the same names for supplementary help appear again and over again in the catalogues: grim pictures of destruction, with no great recommendation of construction, such as Mr. F. W. W. Topham's "Pompeii" (550), Mr. H. B. Roberts's "Homeless" (540), or "The Rush for Water: Scene during the Ramadan in Morocco" (488), by Mr. J. B. Burgess, are well placed. "The Introduction of Lady Mary Wortley Montagu to the Kit-Kat Club" (495) is very clearly and cleverly told by Mr. A. C. Gow, though he just as clearly and cleverly shows it should have been told in water-colours. The story goes that Lord Kingston, at a meeting to choose "toasts" for the year, determined to nominate his daughter, a tyrant of eight years old, as a candidate vaunting her superior attractions compared with those of any lady on the list. The rules of the club making it necessary that those beauties who aspired to the hiccough of honour should have been seen and approved, the small evil was sent for, and came in a quake and her best frock. This is an historical picture! very small and finely done.

"The Path of Roses" (517), by Mr. W. F. Yeames, is a pretty conceit of earliest wedded life: the happy pair stand in the porch to be pelted with flowers: flowers strew the walk left open for bride and bridegroom, with a pleasant string of maiden mischief on one side of it, and a band of minstrels on the other. Circumstances look uncommonly promising, and let us hope they may be happy: a pretty state of things it will be, after all the expense, if they are not.

Mr. H. Le Jeune's children are more charmingly delightful than ever, from his having adopted a peculiarly light scale of colour, but a very winning and pretty one.

"Mending the old Cradle" (600) is the motive for some admirable handiwork, by Mr. A. Stocks, and gives such tone and strong colour to domestic happiness, that the painter must be answerable for the consequences.

"Toddles" (601), by Mr. J. Morgan, takes the next step in these natural proceedings. As usual, the amenities and troubles of childhood's growth form variously the subjects of many pleasant pictures; from the pink baby, "The late Arrival" (625), in addition to a large, little family, by Mr. F. D. Hardy, down to the pretty "Simpletons" (960), Mr. S. L. Fildes has placed in a stationary boat, with a pretty bit of Thames scenery for a background, and very smooth water for the reflection his spoony lovers give if they are incapable of taking any themselves: the sedate pug-dog sits in judgment of their frivolity; but they would not give one of the many rushes at hand for more wisdom just now; not one for other opinion than their own, and of each other. Mr. T. Webster's "Truant" (269), being "run in" by three special constables for the occasion, is too well aware of the stern nature a mild look may hide, not to be restive and recalcitrant at sight of the old schoolmaster ready with his cane: he is, however, one of the boys with many friends, who secure for Mr. Webster a very large circle of admiring acquaintances.

Mr. F. D. Hardy, again, shows an older child than the pink of babydom: little people grow very wise and very early wise in London's back streets. In "Looking for Father" (164) where father is too often to be found; on cold nights when mother's cough is bad and strike has lessened the little store garnered for more home comfort than home affords now: the tavern's warmth and cheer; the loud talk that drowns thought, are for father the Lethe of troubles he is too weak to face: and poor little Madge will watch for an hour through the gap in the curtain before father staggers out of the doorway that leads to the workhouse as surely as to the house of entertainment for man and beast.

Mr. W. Q. Orchardson depends too much on a dexterity that used to be but one of his qualifications; it is the only recommendation now of such flimsy forwardness as a long lady with a small head owning a blood-hound with a big head shows. Wandering in a wilderness of sun-flowers, the first likely enemies to be met with are the earwigs; but "The Protector" (194) is capable of dealing with greater things, and so is the painter. "Cinderella" (354) posed in contemplation of her baptismal ashes, gives no idea of what fairy dress could make of her; or her godmother,—further than to give her a name. "Oscar and Bain" (208) are two rough terriers very cleverly sketched.

Mr. Eyre-Crowe is to be lauded for the completeness with which he works out his pictures, though, to be original, he goes beyond probability. "Brothers of the Brush" (234) are four house-painters, at work for a wager, one would think, to colour the front of a house down in five minutes; for they wriggle and writhe, with desperate determination, on a long ladder, that should have had its maker's name upon it,—it is such an unbending, strong one, which two companions are steadying, one at its foot and the other from the roof of the narrow strip of edifice

that such energy and free play of eight lively arms and legs must make nothing of in no time. Photography could not have more clearly defined what is represented here. The camera's help is suggested too plainly not to be answerable for some of its real and unreal appearance: the perspective, with that strange perversity of fact reflected, suggests this. Mr. Crowe has four or five exhibits; but this is the best. "At the Pit-door" (626) only means dreadfulness, so far as Exeter Hall teaching implies. Warm admirers of a popular actress are getting warmer in their efforts to secure front seats at the theatre of her triumph, and a variety of personages are acting a struggle. Here is laid bare the difference that must ever separate talent from genius. A Leech or a Tenniel would make more of such a subject in an hour than any pains-taking for three months could bring as its reward for labour merely on the part of those who must copy what they see, and not see at a glance what there is to copy.

Mr. E. Long is a very earnest and ambitious painter, and shows that he studies; but "The Moorish Proselytes of Archbishop Ximenes, Granada, 1500" (628), are likely to be regarded as insincerity should ever be. It is poor change, the paper words of false note for the ready currency even of copper coin. Convicts to a Penitentiary are not inviting subjects for depiction.

"The Poor of the Village" (644), "an they be honest," are better worth consideration, though Mr. J. Israels, a Dutch painter, delights in dinge and heavy gray too much. Ugly peasants are buying food from the proprietor of a fishing-boat. It seems to be at solemn sacrifice of principle that they would eat. The poor of the village are of the merriest so long as they have the wherewithal to buy food at all. Give us the sunny side, the silver lining of dark cloud, and with the tinkle of tin pots and a song to the baby, a hope that pleasanter belief in sea-side peasant life may be founded on our own hook.

## STRAINS IN IRON BRIDGES AND ROOFS.

Two books come to our hands simultaneously, bearing almost the same title,* on a subject which has of late years often been written upon. One cause of the frequency of the appearance of such books may be the high and abstruse manner in which strains in girders have been treated by some authors. A master of the higher mathematics too often overlooks the fact that those whom he writes for are not all equally as learned as he is, and when he writes on such a subject as the strains in girders,—one that is interesting to a multitude of people, workmen as well as scholars,—his highly mathematical analysis of them is very imperfectly, if at all, understood by most of those whom he would wish to instruct; and, indeed, this subject of strains is one of those which can be explained in a better and clearer way by other and more simple methods. Another cause is, that writers sometimes lose sight of exactly whom they wish to address, and in trying to accommodate what they have to say to the greatest possible number of readers, they adopt mixed methods of reasoning,—a, b, c, for the novices, and higher pabulum for more advanced students, whereby they make, perhaps, as much as half the book unintelligible to one portion of the community, and the remainder uninteresting to others. The two authors whose books are before us treat the subject, with more or less success, without the aid of the higher mathematics,—Mr. Shreve algebraically, and Mr. Cargill graphically. The graphical method has some advantages in plainness of perception to the senses, but is tiresome in intricate cases, while the algebraical method is more comprehensive, but less perceptible in the process of reasoning. Mr. Cargill says, "it cannot be denied that a method of arriving at any desired result in the field of science which appeals to the senses as well as to the mind, must be more congenial to the comparatively untrained intellect than that which calls into play the mental faculties only. In the former case we perceive, and therefore understand; in the latter, whether we understand or not, we perceive nothing." But surely the first part of the case is over-stated, for we certainly perceive many things which we do not understand; and so with diagrams of strains, the lengths of lines indicate the intensities of forces, but it is only by a process of abstract reasoning that we perceive that they do so; and, indeed, the diagram is merely a memorandum, made evident to the senses, of the truth of that which we must have understood before we could have made a memorandum of it. And we conceive that pupils may easily be led into superficial habits of reasoning, by regarding lines on paper as proving anything of themselves.

In commerce there are "men of straw"; in the engineering and architectural professions there are "men of paper,"—those, namely, who in designing a structure, begin by drawing lines on paper, not having previously considered fully and exactly what they wish to draw, but trusting that, somehow, a few lines laid down will suggest others that ought to follow. So with diagrams of strains. They should be made as memoranda of the processes of abstract reasoning, and not as primarily demonstrating anything. In the simplest form of the principle of the composition and resolution of forces, two forces acting in different directions, and meeting in one and the same point, may be met and held in equilibrium by one force acting in a certain direction, the intensity and direction of which are graphically represented by the length and direction of the diagonal of the parallelogram drawn about the lines representing the two component forces; but this intensity and this direction are not proved because they are represented by the diagonal of the parallelogram, but because of abstract necessity. Diagrams are very useful in these calculations; but it is quite possible that by too frequently relying upon lineal representation of forces, a habit of working without thought may be contracted. "Never be a man of paper," was the warning of an engineer to his pupils.

Before entering upon the general question of strains, Mr. Cargill makes some remarks on the elasticity of iron, from which we quote the following:—"Under ordinary circumstances, an iron bar, after supporting a considerable load, will not return to its original length, but will undergo a permanent alteration in that direction. This permanent increase of length is termed the 'set,' and its amount depends upon the force applied and the nature of the material. When a bar is subjected simply to its safe working-load there is no appreciable set; but as it becomes necessary to test bars in order to ascertain the quality and strength of the iron, a heavy strain must be applied, and the set is, to some extent, an indication of the character of the material. . . . . If the weight be too great, and the set of a corresponding magnitude, the elasticity of the iron is injured." In this we agree. It has always seemed to be folly to apply excessive test-loads in trying the strength of materials, for it by no means follows that because a bar may have borne a given strain once it will bear as much a second time. It is true that if the indicators are sufficiently delicate to show the actual elongation under a given strain, and that strain be repeated with the result that the bar returns to its original length after the force is removed, the test-load can hardly be too high; but imperfections of observation in making the experiments will probably always render these extreme tests undesirable. "There are some peculiarities attending the set of iron deserving of attention. In the first place, it is not produced instantaneously, but some time is required for it to acquire its full amount due to a given weight or strain. When once this has taken place, and the weight has been removed, the second application of it, or of any smaller weight, produces no further set or permanent elongation in the material. Should a considerably greater weight be applied, then the bar will undergo another elongation or set, due to the greater strain upon it." That which follows is inconsistent with this. "It appears as if a certain duration of time were necessary to enable the material to adapt itself to the particular circumstances of each case, for if a heavy weight be suddenly and rapidly applied to a bar it will break, or rather snap at once, without undergoing any elongation of its length; the strain is induced so quickly that the elastic force has no time, to use a common phrase, to exert itself."

Now, any elastic material,—as distinguished from those notoriously brittle, for all materials are more or less elastic,—will resist for a moment, without rupture, a greater force than it will bear during any considerable time, and the statement should have been that it appears as if a certain duration of time were necessary to overcome the cohesive force of the material, and that in a sudden application the strain is induced so quickly that the elastic force recovers itself before the strain has had time to injure it.

Mr. Shreve treats the case differently, and more comprehensively. He keeps up throughout a harmony of discussion and symbols, and the case is stated gradually, beginning with the simpler and proceeding to the more complex forms, the same formulæ being adopted throughout, with such modifications only as the different cases require, each case being considered as a part of the whole. After the discussion of the strains in each form of truss an example is given, worked out in detail, showing the application of the formula. His statements are all deduced from the few simple axioms that lie at the bottom of all principles of construction, the foremost of which is that of the lever, the second the resolution of forces, and the third the equality of moments of forces in structures in a condition of equilibrium. (The moment of a force at any point is its amount multiplied into its distance, measured at right angles to its direction, from the point about which the moment is taken.)

1. *Of the Lever.*—If a weight be borne by a beam, or truss, resting at its extremities upon two supports, these supports may be considered as reacting with two upward pressures, whose sum is equal to the weight; and the weight borne by either support, or the reaction of either support, is to the whole weight as the distance from the centre of gravity of the weight to the further support is to the whole length of the beam or truss.

2. *Of the Resolution of Forces.*—If three forces acting at one point balance, three lines parallel to their directions will form a triangle, whose sides will be proportional to the forces.

3. *Of the Equality of Moments.*—The moments of the forces acting upon a body in equilibrium which tend to turn it in one direction about a certain point, are equal to the moments of the forces which tend to turn it in the opposite direction,—the forces and the point being in the same plane. The directions in which the forces act which are brought to bear upon the members of a truss, are horizontal, vertical, and inclined. The strains induced in the inclined or diagonal braces may be resolved into horizontal and vertical strains by the application of the principle of the resolution of forces. In a truss subject to a uniform constant load throughout its length, and a uniform movable load, the horizontal strains are greatest under a full load, but the vertical strains are greater when the truss is partially (but more than half) loaded—the load extending from one abutment,—than they are under a full load of equal density, and the greatest vertical strain in a truss subject to a rolling load is the strain at any point produced by the constant truss weight added to the strain from the rolling load when it reaches that point, and covers the greater part of the truss. This greater vertical strain from a partial load is, apparently, an anomaly, but it is shown by Mr. Shreve to be so in fact. Mr. Cargill says that to correct this inequality, the platforms of bridges have sometimes been loaded with ballast, to increase the dead weight, and to lessen, comparatively, the effect of the rolling load. He does not, however, approve of this, but suggests a better system of bracing. Both authors give considerable space to the discussion of the strains in roofs, as well as in bridges, but while the one treats of roofs separately, the other treats the strains in them as part of the general subject of strains in trusses; both, however, treat the subject theoretically only, and although a student may ascertain pretty accurately from either the amount and nature of the strains in trusses, he must look elsewhere for the strength necessary to be given to them. This is no disparagement of either book. The first thing to be done in designing a bridge or a roof is to ascertain the amount and the nature of the strains in the several members. A reference, then, to the records of trustworthy experiments on the strength of materials will enable any one who has had sufficient practical experience in the working and use of materials to assign to each member its proper dimensions; but this practical acquaintance with materials is absolutely necessary before a proper structure can be designed, because there are many things to be considered which cannot be taught in books or lectures, and the merely theoretical man can no more design proper structures than the merely practical man can; and of his works we know too much to our sorrow.

* "Strength of Bridges and Roofs." By Samuel H. Shreve, A.M., Civ. Eng. D. Van Nostrand, New York. 1873.

"Strains upon Bridge Girders and Roof Trusses." By Thomas Cargill, C.E. E. & F. N. Spon, London. 1873.

sun is exactly over its head, and the whole figure disappears, while the most casual observer could easily trace by the shadows, as they lessen and deepen in tone, the hours before and after noon. The gnostic gem shows the sun and moon in connexion with the figure; and it is strange that, while the surrounding heights, which comprise the Beachy Head range, are covered with British tumuli. The part of the coast near to the figure has an immense crescent or lunar-shaped embankment, generally called Roman, but which is certainly a British construction.

Numerous derivations have been suggested for the name or names of the deities, none of which appear to me satisfactory. The title seems, I think, compounded of the Celtic possessive pronoun *an*, and *dreos*. This expression would probably include both divinities, and signifies "*their blaze.*"

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If Mr. Briton Rivière is not spoilt by praise he may become a great artist, though he has to unlearn as well as to learn. "Argus" (464), the faithful hound of Ulysses, recognising his master, even when coming death had glazed his eye, must depend much on type explanation: the dog looks more as if narcotised than near nature's measured call; but it is a clever picture nevertheless. "All that was left of the Homeward Bound" (986) is a girl lashed to a bit of broken mast; the raft for a dog, too, that shivers with starvation and consciousness of predicament: in that respect, less happy than the child,—dead, or in a swoon. The dog is the more interesting object here, and a disagreeable one at best. A boat or a bit of rock visible to make it likely that a haven awaited the sufferers would change the impression this picture leaves,—a painful one, though it is not seen at first or second sight if the poor little maiden be dead or not. However, partial success in such an attempt as this puts forth is worth tons of such platitude as smiles from the walls of some of the galleries.

A cynic,—one, perhaps, of the many hundreds of disappointed painters who had hoped to improve the character of the present exhibition, so far as his offered great help promised,—would be more likely to find in his visit a shilling's worth of contradiction when thinking of the proverb, "Success may be deserved, but not commanded," than to take its value out in discovering where success, if not attained, has been deserved. There is ever a smell of the expired additional lights of old Vauxhall in the announcement of so many thousands of pictures, surplus of the Royal Academy budget: in number right to the unit unquestionably; but is it their room or their company that makes the wanting of the one polite excuse of the other?

It is necessary to be cruel to be kind sometimes, and if it were plainly stated, as it safely might be, that the best of a choice was presented, no silly doubts could be entertained of the justice shown, any more than the capability of judging could be denied to those whose troublesome task it is to make this choice. But the same names for supplementary help appear again and over again in the catalogues: grim pictures of destruction, with no great recommendation of construction, such as Mr. F. W. W. Topham's "Pompeii" (550), Mr. H. B. Roberts's "Homeless" (540), or "The Rush for Water: Scene during the Ramadan in Morocco" (488), by Mr. J. B. Burgess, are well placed. "The Introduction of Lady Mary Wortley Montagu to the Kit-Kat Club" (495) is very clearly and cleverly told by Mr. A. C. Gow, though he just as clearly and cleverly shows it should have been told in water-colours. The story goes that Lord Kingston, at a meeting to choose "toasts" for the year, determined to nominate his daughter, a tyrant of eight years old, as a candidate vaunting her superior attractions compared with those of any lady on the list. The rules of the club making it necessary that those beauties who aspired to the hiccough of honour should have been seen and approved, the small evil was sent for, and came in a quake and her best frock. This is an historical picture! very small and finely done.

"The Path of Roses" (517), by Mr. W. F. Yeames, is a pretty conceit of earliest wedded life: the happy pair stand in the porch to be pelted with flowers: flowers strew the walk left open for bride and bridegroom, with a pleasant string of maiden mischief on one side of it, and a band of minstrels on the other. Circumstances look uncommonly promising, and let us hope they may be happy: a pretty state of things it will be, after all the expense, if they are not.

Mr. H. Le Jeune's children are more charmingly delightful than ever, from his having adopted a peculiarly light scale of colour, but a very winning and pretty one.

"Mending the old Cradle" (600) is the motive for some admirable handiwork, by Mr. A. Stocks, and gives such tone and strong colour to domestic happiness, that the painter must be answerable for the consequences.

"Toddles" (601), by Mr. J. Morgan, takes the next step in these natural proceedings. As usual, the amenities and troubles of childhood's growth form variously the subjects of many pleasant pictures; from the pink baby, "The late Arrival" (625), in addition to a large, little family, by Mr. F. D. Hardy, down to the pretty "Simpletons" (960), Mr. S. L. Fildes has placed in a stationary boat, with a pretty bit of Thames scenery for a background, and very smooth water for the reflection his spoony lovers give if they are incapable of taking any themselves: the sedate pug-dog sits in judgment of their frivolity; but they would not give one of the many rushes at hand for more wisdom just now; not one for other opinion than their own, and of each other. Mr. T. Webster's "Truant" (269), being "run in" by three special constables for the occasion, is too well aware of the stern nature a mild look may hide, not to be restive and recalcitrant at sight of the old schoolmaster ready with his cane: he is, however, one of the boys with many friends, who secure for Mr. Webster a very large circle of admiring acquaintances.

Mr. F. D. Hardy, again, shows an older child than the pink of babydom: little people grow very wise and very early wise in London's back streets. In "Looking for Father" (164) where father is too often to be found; on cold nights when mother's cough is bad and strike has lessened the little store garnered for more home comfort than home affords now: the tavern's warmth and cheer; the loud talk that drowns thought, are for father the Lethe of troubles he is too weak to face: and poor little Madge will watch for an hour through the gap in the curtain before father staggers out of the doorway that leads to the workhouse as surely as to the house of entertainment for man and beast.

Mr. W. Q. Orchardson depends too much on a dexterity that used to be but one of his qualifications; it is the only recommendation now of such flimsy forwardness as a long lady with a small head owning a blood-hound with a big head shows. Wandering in a wilderness of sun-flowers, the first likely enemies to be met with are the earwigs; but "The Protector" (194) is capable of dealing with greater things, and so is the painter. "Cinderella" (354) posed in contemplation of her baptismal ashes, gives no idea of what fairy dress could make of her; or her godmother,—further than to give her a name. "Oscar and Bain" (208) are two rough terriers very cleverly sketched.

Mr. Eyre-Crowe is to be lauded for the completeness with which he works out his pictures, though, to be original, he goes beyond probability. "Brothers of the Brush" (234) are four house-painters, at work for a wager, one would think, to colour the front of a house down in five minutes; for they wriggle and writhe, with desperate determination, on a long ladder, that should have had its maker's name upon it,—it is such an unbending, strong one, which two companions are steadying, one at its foot and the other from the roof of the narrow strip of edifice

that such energy and free play of eight lively arms and legs must make nothing of in no time. Photography could not have more clearly defined what is represented here. The camera's help is suggested too plainly not to be answerable for some of its real and unreal appearance: the perspective, with that strange perversity of fact reflected, suggests this. Mr. Crowe has four or five exhibits; but this is the best. "At the Pit-door" (626) only means dreadfulness, so far as Exeter Hall teaching implies. Warm admirers of a popular actress are getting warmer in their efforts to secure front seats at the theatre of her triumph, and a variety of personages are acting a struggle. Here is laid bare the difference that must ever separate talent from genius. A Leech or a Tenniel would make more of such a subject in an hour than any pains-taking for three months could bring as its reward for labour merely on the part of those who must copy what they see, and not see at a glance what there is to copy.

Mr. E. Long is a very earnest and ambitious painter, and shows that he studies; but "The Moorish Proselytes of Archbishop Ximenes, Granada, 1500" (628), are likely to be regarded as insincerity should ever be. It is poor change, the paper words of false note for the ready currency even of copper coin. Convicts to a Penitentiary are not inviting subjects for depiction.

"The Poor of the Village" (644), "an they be honest," are better worth consideration, though Mr. J. Israels, a Dutch painter, delights in dinge and heavy gray too much. Ugly peasants are buying food from the proprietor of a fishing-boat. It seems to be at solemn sacrifice of principle that they would eat. The poor of the village are of the merriest so long as they have the wherewithal to buy food at all. Give us the sunny side, the silver lining of dark cloud, and with the tinkle of tin pots and a song to the baby, a hope that pleasanter belief in sea-side peasant life may be founded on our own hook.

## STRAINS IN IRON BRIDGES AND ROOFS.

Two books come to our hands simultaneously, bearing almost the same title,* on a subject which has of late years often been written upon. One cause of the frequency of the appearance of such books may be the high and abstruse manner in which strains in girders have been treated by some authors. A master of the higher mathematics too often overlooks the fact that those whom he writes for are not all equally as learned as he is, and when he writes on such a subject as the strains in girders,—one that is interesting to a multitude of people, workmen as well as scholars,—his highly mathematical analysis of them is very imperfectly, if at all, understood by most of those whom he would wish to instruct; and, indeed, this subject of strains is one of those which can be explained in a better and clearer way by other and more simple methods. Another cause is, that writers sometimes lose sight of exactly whom they wish to address, and in trying to accommodate what they have to say to the greatest possible number of readers, they adopt mixed methods of reasoning,—a, b, c, for the novices, and higher pabulum for more advanced students, whereby they make, perhaps, as much as half the book unintelligible to one portion of the community, and the remainder uninteresting to others. The two authors whose books are before us treat the subject, with more or less success, without the aid of the higher mathematics,—Mr. Shreve algebraically, and Mr. Cargill graphically. The graphical method has some advantages in plainness of perception to the senses, but is tiresome in intricate cases, while the algebraical method is more comprehensive, but less perceptible in the process of reasoning. Mr. Cargill says, "it cannot be denied that a method of arriving at any desired result in the field of science which appeals to the senses as well as to the mind, must be more congenial to the comparatively untrained intellect than that which calls into play the mental faculties only. In the former case we perceive, and therefore understand; in the latter, whether we understand or not, we perceive nothing." But surely the first part of the case is over-stated, for we certainly perceive many things which we do not understand; and so with diagrams of strains, the lengths of lines indicate the intensities of forces, but it is only by a process of abstract reasoning that we perceive that they do so; and, indeed, the diagram is merely a memorandum, made evident to the senses, of the truth of that which we must have understood before we could have made a memorandum of it. And we conceive that pupils may easily be led into superficial habits of reasoning, by regarding lines on paper as proving anything of themselves.

In commerce there are "men of straw"; in the engineering and architectural professions there are "men of paper,"—those, namely, who in designing a structure, begin by drawing lines on paper, not having previously considered fully and exactly what they wish to draw, but trusting that, somehow, a few lines laid down will suggest others that ought to follow. So with diagrams of strains. They should be made as memoranda of the processes of abstract reasoning, and not as primarily demonstrating anything. In the simplest form of the principle of the composition and resolution of forces, two forces acting in different directions, and meeting in one and the same point, may be met and held in equilibrium by one force acting in a certain direction, the intensity and direction of which are graphically represented by the length and direction of the diagonal of the parallelogram drawn about the lines representing the two component forces; but this intensity and this direction are not proved because they are represented by the diagonal of the parallelogram, but because of abstract necessity. Diagrams are very useful in these calculations; but it is quite possible that by too frequently relying upon lineal representation of forces, a habit of working without thought may be contracted. "Never be a man of paper," was the warning of an engineer to his pupils.

Before entering upon the general question of strains, Mr. Cargill makes some remarks on the elasticity of iron, from which we quote the following:—"Under ordinary circumstances, an iron bar, after supporting a considerable load, will not return to its original length, but will undergo a permanent alteration in that direction. This permanent increase of length is termed the 'set,' and its amount depends upon the force applied and the nature of the material. When a bar is subjected simply to its safe working-load there is no appreciable set; but as it becomes necessary to test bars in order to ascertain the quality and strength of the iron, a heavy strain must be applied, and the set is, to some extent, an indication of the character of the material. . . . . If the weight be too great, and the set of a corresponding magnitude, the elasticity of the iron is injured." In this we agree. It has always seemed to be folly to apply excessive test-loads in trying the strength of materials, for it by no means follows that because a bar may have borne a given strain once it will bear as much a second time. It is true that if the indicators are sufficiently delicate to show the actual elongation under a given strain, and that strain be repeated with the result that the bar returns to its original length after the force is removed, the test-load can hardly be too high; but imperfections of observation in making the experiments will probably always render these extreme tests undesirable. "There are some peculiarities attending the set of iron deserving of attention. In the first place, it is not produced instantaneously, but some time is required for it to acquire its full amount due to a given weight or strain. When once this has taken place, and the weight has been removed, the second application of it, or of any smaller weight, produces no further set or permanent elongation in the material. Should a considerably greater weight be applied, then the bar will undergo another elongation or set, due to the greater strain upon it." That which follows is inconsistent with this. "It appears as if a certain duration of time were necessary to enable the material to adapt itself to the particular circumstances of each case, for if a heavy weight be suddenly and rapidly applied to a bar it will break, or rather snap at once, without undergoing any elongation of its length; the strain is induced so quickly that the elastic force has no time, to use a common phrase, to exert itself."

Now, any elastic material,—as distinguished from those notoriously brittle, for all materials are more or less elastic,—will resist for a moment, without rupture, a greater force than it will bear during any considerable time, and the statement should have been that it appears as if a certain duration of time were necessary to overcome the cohesive force of the material, and that in a sudden application the strain is induced so quickly that the elastic force recovers itself before the strain has had time to injure it.

Mr. Shreve treats the case differently, and more comprehensively. He keeps up throughout a harmony of discussion and symbols, and the case is stated gradually, beginning with the simpler and proceeding to the more complex forms, the same formulæ being adopted throughout, with such modifications only as the different cases require, each case being considered as a part of the whole. After the discussion of the strains in each form of truss an example is given, worked out in detail, showing the application of the formula. His statements are all deduced from the few simple axioms that lie at the bottom of all principles of construction, the foremost of which is that of the lever, the second the resolution of forces, and the third the equality of moments of forces in structures in a condition of equilibrium. (The moment of a force at any point is its amount multiplied into its distance, measured at right angles to its direction, from the point about which the moment is taken.)

1. *Of the Lever.*—If a weight be borne by a beam, or truss, resting at its extremities upon two supports, these supports may be considered as reacting with two upward pressures, whose sum is equal to the weight; and the weight borne by either support, or the reaction of either support, is to the whole weight as the distance from the centre of gravity of the weight to the further support is to the whole length of the beam or truss.

2. *Of the Resolution of Forces.*—If three forces acting at one point balance, three lines parallel to their directions will form a triangle, whose sides will be proportional to the forces.

3. *Of the Equality of Moments.*—The moments of the forces acting upon a body in equilibrium which tend to turn it in one direction about a certain point, are equal to the moments of the forces which tend to turn it in the opposite direction,—the forces and the point being in the same plane. The directions in which the forces act which are brought to bear upon the members of a truss, are horizontal, vertical, and inclined. The strains induced in the inclined or diagonal braces may be resolved into horizontal and vertical strains by the application of the principle of the resolution of forces. In a truss subject to a uniform constant load throughout its length, and a uniform movable load, the horizontal strains are greatest under a full load, but the vertical strains are greater when the truss is partially (but more than half) loaded—the load extending from one abutment,—than they are under a full load of equal density, and the greatest vertical strain in a truss subject to a rolling load is the strain at any point produced by the constant truss weight added to the strain from the rolling load when it reaches that point, and covers the greater part of the truss. This greater vertical strain from a partial load is, apparently, an anomaly, but it is shown by Mr. Shreve to be so in fact. Mr. Cargill says that to correct this inequality, the platforms of bridges have sometimes been loaded with ballast, to increase the dead weight, and to lessen, comparatively, the effect of the rolling load. He does not, however, approve of this, but suggests a better system of bracing. Both authors give considerable space to the discussion of the strains in roofs, as well as in bridges, but while the one treats of roofs separately, the other treats the strains in them as part of the general subject of strains in trusses; both, however, treat the subject theoretically only, and although a student may ascertain pretty accurately from either the amount and nature of the strains in trusses, he must look elsewhere for the strength necessary to be given to them. This is no disparagement of either book. The first thing to be done in designing a bridge or a roof is to ascertain the amount and the nature of the strains in the several members. A reference, then, to the records of trustworthy experiments on the strength of materials will enable any one who has had sufficient practical experience in the working and use of materials to assign to each member its proper dimensions; but this practical acquaintance with materials is absolutely necessary before a proper structure can be designed, because there are many things to be considered which cannot be taught in books or lectures, and the merely theoretical man can no more design proper structures than the merely practical man can; and of his works we know too much to our sorrow.

* "Strength of Bridges and Roofs." By Samuel H. Shreve, A.M., Civ. Eng. D. Van Nostrand, New York. 1873.

"Strains upon Bridge Girders and Roof Trusses." By Thomas Cargill, C.E. E. & F. N. Spon, London. 1873.

## LONDON SUBURBAN TAVERNS.

THE habits of a nation are changed by the growth of its cities; and when London was comparatively small, this country was known as "Merry England," a designation that would be very inappropriate if applied to it in the present day. In the time of good Queen Bess, the citizen after his day's work could stroll out into the country and come home again to bed after enjoying the healthful smell of the hayfields; but now it is a day's journey to get out of sight of streets and chimney-pots. Even at the beginning of the present century grass was to be found within easy walking distance, and John Thomas Smith relates in his "Book for a Rainy Day," that in 1772 all beyond Portland Chapel, in Great Portland-street was country. Smith's mother was recommended to rise early and take milk at the cowhouse: so she used to cross the New-road and walk to a place called William's farm near the "Jew's Harp House Tavern and Tea-gardens," on the borders of Marylebone Park, where Speaker Onslow was at one time in the habit of spending his evenings, till he was discovered and made too much fuss with to suit his quiet habits.

The public-house in Albany-street, with the odd sign of the "Queen's Head and Artichoke," was at the time that Mrs. Smith took her morning walks a little old tavern in a meadow entered from the New-road by a turnstile. The sign was a weather-beaten portrait of Queen Elizabeth, and the report was that the house had been kept originally by one of her Majesty's gardeners. Londoners of old lived a much more out-of-door life than they do now, and round London were numerous wayside-inns and tea-gardens, which were highly popular, and much frequented. In the main thoroughfares leading out of town there were public-houses with seats and tables in front, at which substantial tradesmen and their families were in the habit of regaling themselves in the same manner as is now common on the Boulevards of Paris. These seats and tables may still be seen in some places, but they are now only used by the working classes.

We have before us drawings of some of the old inns round London taken at the beginning of the last century, with MS. memoranda relative to their history; and in the following notice of these inns, most of them now either destroyed or swallowed up by the ever onward tide of London growth, we have incorporated this information. Some of the inns obtained a sinister reputation from their landlords being in league with or harbouring highwaymen.

The "Chalk Farm Tavern," now rebuilt in the midst of shops, was, only a few years ago, in so retired a situation, that the field near it was thought to be a specially appropriate place for the fighting of duels, and many a weary man has rested his limbs upon a bed in this house as his life was fast ebbing away. Further north was "Belsize House," formerly a family mansion, but turned into a place of entertainment in 1720. At that date twelve "stout fellows completely armed" were employed as a patrol between this place and the town. In June, 1722, the appearance of nobility and gentry at Belsize was so great that they reckoned between 300 and 400 coaches; at which time a wild deer was hunted down and killed in the park before the company, which gave nearly three hours' diversion. About thirty years after this the house was again inhabited by gentlemen. It was rebuilt, and the Right Hon. Spencer Perceval lived in it for a time.

The "Upper Flask Inn" at Hampstead was once a famous house. Here Clarissa Harlowe lodged when she attempted to escape from Lovelace, and the Kit-cat Club met in one of the rooms during the summer months. Sir Richard Blackmore refers to the place in his poem, "The Kit-Cats:"—

> "Or when, Apollo-like, thou'rt pleased to lead
> Thy sons to feast on Hampstead's airy head;
> Hampstead that, tow'ring in superior sky,
> Now with Parnassus does in honour vie."

The house was afterwards converted into a private residence, and George Steevens, the Shakspearian editor, lived in it.

The "Two Wrestlers," at Highgate, was an old house which, from a date over the chimney, is supposed to have been built in 1502. It is said that Charles II. and Rochester were obliged to make it their abode for one night in October, 1,664, when they were out on one of their roving excursions. It afterwards became a favourite resort of highwaymen. Kentish town was tolerably well supplied with inns; but they did not add to the safety of travellers. Those who now pass these houses in a yellow omnibus will find it difficult to realise the state of things represented by the following particulars. Opposite the "Bull and Gate" Squire Greenwood was robbed by W. Yates, H. Morris, and B. Fink, who, after frightening the village, got clean off; but were afterwards taken and hanged at Tyburn, in May, 1736. The "Bull and Last" was kept by John Young, who was hanged at Kennington, for the robbery of Thomas Swinton, in May, 1730. Thomas Theobalds was taken in bed at the "Flask" for a robbery at Squire Matthews's, near Highgate Church, on the 13th of August, 1731.

"Copenhagen House" stood alone in the fields upon which the New Cattle Market has lately been built. It is called "Coopen Hagen" in Camden's "Britannia" (1695), and was, according to tradition, the residence of a Danish prince or ambassador during the Great Plague of 1665. In 1780 Lord George Gordon's rioters passed the house, on their way to attack the seat of Lord Mansfield at Caen Wood, and at this time a party of soldiers were sent to occupy the place until the riots were quelled.

The "Dun Cow," at Holloway, was built in 1604, and on the view of the house that is now before us is the following MS. note relating to one of the notorious frequenters of the place:—"In this house last year, the 20th of October, I met a person whom I took for an honest man: his conversation was agreeable, and he was very good-looking. Since many times I have thought of my fortunate escape, for he was no other than the notorious Turpin. A little after he left me he stopped Lady Dolin's chariot and robbed her of 12*l.* and her watch and rings. This is the last public inn in Holloway. I find Turpin is staying near Hackney. 8 May, 1731."

The site of the Great Northern Station at King's Cross was formerly a lonely spot. Near the "Red Lion," Battle Bridge, John Everett, of St. Pancras, the highwayman, stopped Mrs. Manly's chariot, for which crime he was hanged at Tyburn, on February 29th, 1730, Robert Beech, the landlord, being evidence against him.

Ball's Pond takes its name from a former keeper of a public-house near Newington Green,—one John Ball, who kept the "Salutation" about the middle of the seventeenth century, a place much frequented by the lower orders to see the sports of bull-baiting, duck-hunting, &c. The ancient village of Islington was long famous for its inns:—

> "The Queen's Head and Crown in Islington town,
> Bore, for its brewing, the brightest renown."

These two houses were both situated in the Lower-road, and there was a tradition that the "Queen's Head" was once occupied by Lord Treasurer Burleigh. It was a fine specimen of the domestic architecture of the reign of Henry VII. The "Crown" was pulled down previously to 1810, and the old "Queen's Head" in 1820. The "Pied Bull," situated in the Upper-street, was built about the reign of Elizabeth, and tradition claims it as the residence of Sir Walter Raleigh, and the first house in England where tobacco was smoked. The "White Conduit House" was built about the year 1641, and was for many years quietly situated in the fields. It took its name from a stone conduit which was close by and is shown in the engravings of the house. It was originally a small ale and cake house, at which time White Conduit rolls were nearly as well known as Chelsea buns. The wheel-pond close by was a noted place for duck-hunting, and the house was long a favourite as a semi-country resort. The original tavern was taken down in 1832, and rebuilt, and in 1849 the gardens were let on building leases. The author of the "Beauties of England and Wales" writes as follows of some of these suburban places of entertainment:—"The adjacent tea-gardens and taverns of Highbury, Canonbury, the White Conduit and Copenhagen Houses, all in fine open situations, and furnished with bowling-greens, &c., afford a diversity of entertainment to numbers of the middle and lower classes from the metropolis in their hours of relaxation." Thomas Lord, one of the attendants at the White Conduit Cricket Club, subsequently established the Marylebone Club, and gave his name to the famous ground at St. John's Wood.

The "Canonbury Tavern," bowling-green, and tea-gardens, were kept by the widow Sutton from 1785 to 1808, during which period their fame was widely spread. "Sadler's Wells" Music House, subsequently Sadler's Wells Theatre, was once celebrated for its chalybeate spring. The manor of Highbury formerly belonged to the Knights Hospitallers of St. John of Jerusalem, and "Highbury Barn Tavern" takes its name from a barn which was attached to the prior's house.

Hackney was a fashionable village in the sixteenth and seventeenth centuries, and its inns were numerous and of some renown. The "Three Cranes," in Church-street, was a public hostelry in the early part of the fifteenth century, and took the name of its sign from the machine for raising weights, and not from the bird. The men engaged in building the tower St. Augustine's Church, as it was then called, in 1440, were paid at this house, and from this connexion the machine used by the builders was taken as a sign. On the 17th of December, 1729, Benjamin Keys and John Johnson followed John Stainer, with the Norwich mail-bags, from this house, and robbed and murdered him beyond Clapton, his body being found in a pond there on the next day. The "Cock," at the corner of Sylvester-row, Church-street, was here in 1651, at which date a token was struck by the landlord. In a room in this house a party of Papist conspirators met, on the 2nd of October, 1661, to waylay and assassinate Charles II. on his return to town from Sir Thomas Vyner's mansion, afterwards called the "Black and White House." The men were baulked in their design, from one of their companions being known to the landlord, John Braine, who sent to inform Sir Thomas. In the mean time they escaped, but left their swords behind them. There is a token of the "White Hart," in Mare-street, dated 1668. Colonel Okey, the regicide, was taken prisoner at this house, after having been concealed for three weeks by Ann Nicholls, who had been an old servant of his while he lived at Barber's Barn, in the same street.

The "King's Head" changed its name several times. Previously to the restoration it was called the "Cromwell's Head," but afterwards the landlord, one Owen, was ordered to be publicly whipped and pilloried for having such a sign. Having thus been taught wisdom, he put up a portrait of one of the Princes of Orange, which he had bought, and called it "King Charles's Head." The "Blue Post Tavern and Tea-garden," in Wells-street, past which "a coach to London" ran "every day," was originally called the "Templars' House," but the reason for such name is not known. It was the once magnificent mansion of Henry Percy, Earl of Northumberland. The "Pie Tavern," in Mare-street, was supposed to be the oldest house of entertainment in Hackney, and in 1434 the Prior of St. John's granted a hostelry called the "Pie" to one John of Banbury, on the condition of bringing bait to him as he passed to his house. Mare-street was then called Gaveston-street. The house was pulled down to form the "Grove" many years ago. At the "Green Dragon," afterwards called the "Northumberland Arms," Bagnigge Wells-road, the infamous Catherine Hays was taken with Tom Billings for the murder of her husband; the landlord, John Blakely, being one of the witnesses against her. She was burnt alive at Tyburn, on May 9, 1726, and Billings was hanged at the same time.

The "Pindar of Wakefield," in Gray's Inn-lane, was destroyed by a hurricane in November, 1723, at which time the two daughters of the landlord were killed by the falling walls. The house was rebuilt in 1724.

Behind the "Half-way House," Hampstead-road, famous for its "prime cakes, twopenny, and ale," Parson Kinnersly robbed Squire Thrupp of 500*l.* after wounding him. He was placed in Newgate for this crime, and died there in April, 1729.

The Manor of Tothele, Totenhall, or Tottenham Court, is mentioned in Domesday Book, and in the year 1560 it was demised to Queen Elizabeth for ninety-nine years, in the name of Sir Robert Dudley. It afterwards became the property of Isabella, Countess of Arlington, from whom it was inherited by her son, Charles Fitzroy, Duke of Grafton. In 1768 it was vested in the Hon. Charles Fitzroy (afterwards Lord Southampton), and a few years afterwards Fitzroy-square, Grafton-street, &c., were built upon part of the site. Tottenham Court is described in Dodsley's "London and its Environs" (1761), as "a pleasant village, situated between St. Giles's and Hampstead"; and Gay had previously mentioned it in his verse as a rural place:—

> "When the sweet breathing spring unfolds the buds,
> Love flies the dusty town for shady woods,
> Then Tottenham fields with roving beauty swarm,
> And Hampstead balls the City virgins warm."

The "Manor House" was transformed into a public house and tea gardens in the seventeenth century, and from the parish books of St. Giles's, for 1645, it appears that three persons were fined a shilling a-piece "for drinking at Tottenhall Court on the Sabbath daie." The sign of the house was the "Adam and Eve," and the tavern at the corner of Euston and Hampstead roads still retains this sign. Eden-street, which is the first turning from the New-road on the west side of the Hampstead-road, was built on the site of the gardens. Hogarth has introduced this tavern into his picture of the "March to Finchley," and Broughton and Slack exhibited here their pugilistic skill. It was at one time well and reputably attended, but the Gooseberry fair in Tottenham-Court-road brought together so many persons of the lowest class that early in the eighteenth century it had obtained a very ill name as a resort of vicious characters, and soon after the fair in 1730, seven footpads were taken at this place. The "King's Head," to which Miss Morris was taken against her will by one Russel, was close by the "Adam and Eve." For assisting in this abduction, Mary Hendron and Margaret Pendergrass were hanged at Tyburn in May, 1728.

The notorious James Dalton was taken prisoner at the "Bull's Head," Tottenham Court-road, for the robbery of Dr. Mead by stopping his coach in Leather-lane, Holborn, in December, 1729. The man committed above fifty robberies in and near London, and was evidence against Jonathan Wild and Blueskin, but at last he got his deserts, and was hanged at Tyburn on May 12, 1730. The "Farthing Pie House," New-road, at the corner of Norton-street, was so called because mutton pies were sold there at that low price. It was afterwards called the "Green Man." In a pond near the house, Mr. Huddle, the landlord, found the trunk and limbs of a Mr. Hays, wrapped in two blankets, on March 26, 1726, and shortly after the murdered man's wife, who committed the crime, was burnt at Tyburn, as mentioned before. The house was visited by many opulent freeholders, and Wilkes frequented it to obtain votes when he was a candidate for the county of Middlesex. The painter Wilson often played skittles here.

The "Rose of Normandy" tavern, gaming-house, and bowling-green was a very old place of entertainment, joined to the better known Marylebone Gardens. Long's bowling-green, at the "Rose," at Marylebone, is mentioned in the *London Gazette* for January 11, 1691, as half a mile distant from London, and in 1746 robberies were so frequent, and thieves so desperate, that the proprietor of the gardens was obliged to have a guard of soldiers to protect the company to and from London. Sheffield, Duke of Buckingham, is said to have been a constant frequenter of the place, and Lady Mary Wortley Montagu is supposed to have referred to him in her line:—

"Some dukes at Marybone bowl time away."

The gardens are also made by Gay the scene of one of Macheath's debauches in the "Beggar's Opera."

The taverns and tea-gardens of Paddington and Bayswater were long in high repute. The "White Lion," the "Red Lion," the "Pack-horse," and the "Wheatsheaf," were all old houses, and with the latter tradition couples the name of Ben Jonson. Knightsbridge again, as the chief entrance to London, was well supplied with inns. These places were many of them favourite resorts by day, but at night they were frequented by highwaymen, and a MS. annotator of Norden's "Speculum Britannia" suggests that "no good man walk there too late unless he can make his party good." Knightsbridge was a sort of Gretna Green of the seventeenth and eighteenth centuries, and the couples who were yoked together were excellent customers to the taverns of the place. The "World's End" is referred to by Pepys, Congreve, and many of the old dramatists. "Jenny's Whim" was a favourite resort of a rather later date. It was on the site of St. George's-row.

The "Mulberry Garden" at Pimlico, which stood on the site of Buckingham Palace, was a favourite place of entertainment in the reign of Charles II., where the gay world were fond of spending their evening hours. The most interesting recollection of it to us, however, is that of John Dryden sitting there eating the tarts he loved.

We must now bring this notice of suburban inns to a close, not from lack of materials but from lack of space, because an account of all the inns that once surrounded London would fill a volume rather than an article. We will, however, mention in conclusion two inns of much interest at Fulham. The "Golden Lion" was erected about Henry VII.'s reign, and in it, according to local tradition, Bishop Bonner lived for a time. Tradition adds that a subterranean path communicated with the palace. At the "King's Arms" a party of Londoners are said to have taken refuge at the time of the fire of London, and that event was commemorated at this house on the 1st of September for many years.

## RUSSIA, KHIVA, AND ART PROGRESS.

It would be difficult to find an artistic and architectural problem more curious than that of the Russian one as it now is. Mr. Cobden travelled, as is well known, over the whole of Europe, for the purpose of instructing the world in the principles of free trade, and seems to have been more especially interested in Russia. Russia is in what may be conveniently termed a *middle age* state of progress. In no other country in Europe can we find such another parallel to our own Middle Ages. In this island, now-a-days, so different from the past, no Peter the Hermit, nor Thomas à Beckett, could hope to find many sympathisers or helpers; nor can there be any possibility of "building cathedrals" on a *great* scale as of yore. The feelings of men have changed, and the wealth of building has gone into other channels. But in Russia, as Mr. Cobden has noted, the whole nation is yet in the fervour of church building, and no small portion of the national industry is employed in the making of silver and gilt church ornaments, in the casting of statues and columns, in the burnishing of domes and cupolas, and in marble carving for the "ornamentation" of cathedrals and churches; and, he adds, that the most gorgeous products of the Russian looms are destined for the hangings of altars and for the vestments of priests. We need say nothing at present of the art-style in which, or from which, these things are executed. Some future world's exhibition may perhaps show us typical examples of those curious things—of the past still in the present. We simply note facts.

It would seem almost impossible to transport oneself into a distant time so as to thoroughly realise it, and though so much study has been given to the "Middle Ages," yet is it all but impossible to understand the intensity of feeling which brought into existence those great cathedrals and churches which nowadays, in architects' offices, form the "precedent" by which to go to work, and without whose guidance and help nothing well could be done! But in Russia this is, in reality, all now going on, in a natural way. Books of precedent can be done without, and the new church would seem to grow, naturally, out of the one last built, and Mr. Cobden, even with his somewhat hard commercial eye, could not but be struck with the individuality of some of the work done. One of his building accounts is curious. He saw by the side of a great church, "sparkling with ornaments," at Nishni Novogorod, where the Great Fair is held, a very simple, unpretending mosque, so entirely without ornamental details, and so *plain*, that he could not but ask his Mahometan guide how it was, with but whitewashed walls, and without fixture or furniture of any kind but the green floor-cloth and pulpit of wood. The answer he got was, "Why should we have *any* ornament *here?*" It must be indeed something not a little curious to see a building going on from pure necessity alone, and with not only no borrowings from fashionable surroundings, but all going on in absolute opposition to them all, and *per se*.

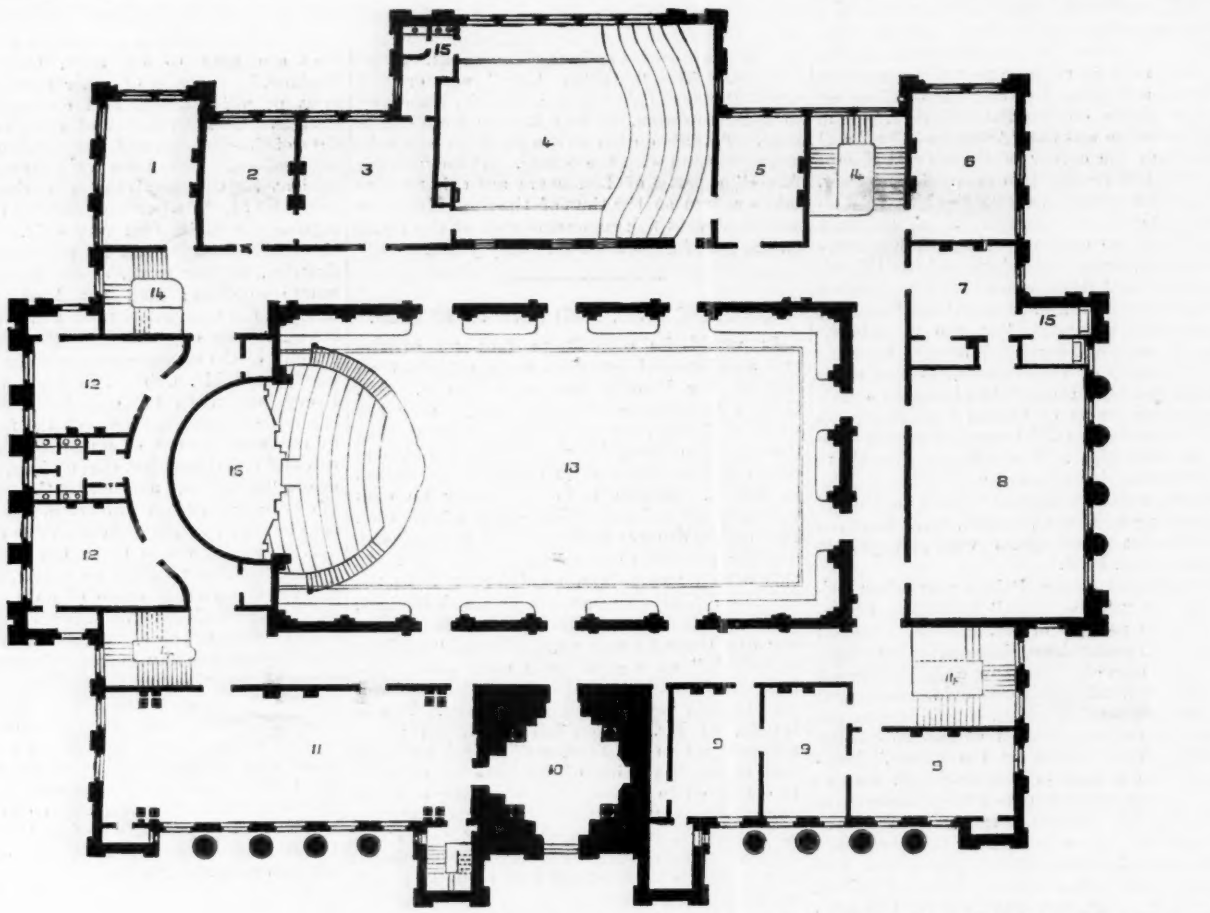
We can hardly imagine a place anywhere wherein the art of it can be in a more puzzling state than in Russia. The Middle Ages in the present! All sorts of experiments are said to have been made by the late Emperor to foster this and that manufacture, and Mr. Cobden noted that no country in the world ever suffered so much from attempts to force a manufacturing system foreign to it into artificial life, as in Russia. Nowhere else has the experiment been made on so large a scale, upon a community so unprepared for the experiment. It is indeed wonderful to think how persistently some men will go on in error. Art-manufacture now well-nigh rules the world, and the Russian has been trying, by dint of machinery of English manufacture, to do that which it would almost seem England alone can do. All those miracles of mechanism which a cotton-mill alone can exhibit are here to be seen, borrowed from England, by the side of other machinery of the most primitive design and construction. The ploughs are on the model of those in use in the days of Cincinnatus, and the scythes and reaping hooks may have been the instruments of the ancient Scythians. What a curious thing it would be to see a nation working out its own capabilities in its own way *only*. Russia, like all other countries, has its own *natural* art industries, leather work, coarse linens, cordage, coarse woollens; and, not least, articles of *wood*, in the manipulation of which the Russian is not a little original and ingenious. The ingenuity of the common people in the working of wood, says Mr. Cobden, is truly remarkable. Every nation to its own individuality must surely be the guiding light of the future. It is by the working out of its own special capacities and individualities, that nations, artistically, are to "progress," and not by the transplanting of exotic productions into them. In Russia this is to be noted in a most remarkable degree.

And, again, would there not seem to be a power peculiar to itself in Russia, to elaborate an art and an architecture of its own. What a pity it is that all governments are above noticing such matters as these. It was the steady aim of the late emperor to "improve" his people out of themselves,—to *borrow* from other nations, especially from England, all he could; and never before, perhaps, was so much capacity and wealth thrown away in the vain attempt to make men other than what nature made them. Mr. Cobden laments this, as well he might, and points out how well the Russian can do his *own* work, and how painfully he does the work which is artificially forced on him,—his own work in his own materials, that is.

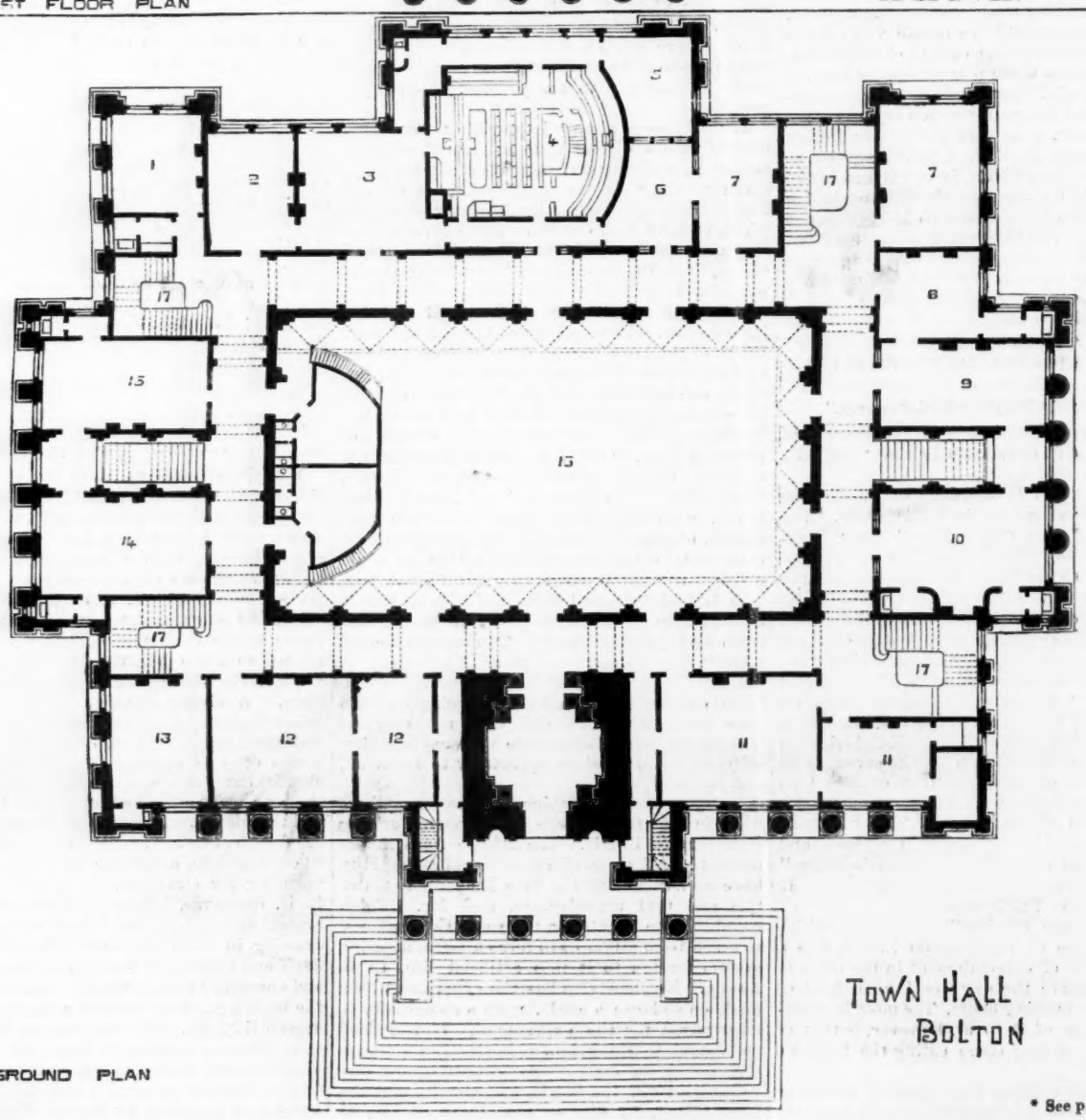
To go but a step further with this singularity of the Middle Ages in the present. Russia, says Mr. Carlyle,—great, silent Russia, without, as yet, a voice,—nought but the *voice* of its cannon, and the noise of the tramp of its Cossacks,—what *will* it say, when it does speak? Well, we must patiently wait. But at least we may *see* what Russia does, and there can be no sort of mistake or ambiguity about it. Russia is progressing, and is going on further and further, and the curious artistic question is,—of course, looking steadily at art,—What is Russia taking into those distant regions, and how far will it oust out of existence what it finds of original matter, and what will it put in the place of it? Khiva is further off by a long, long way than the Middle Ages. The "walled town" and its strange ways take us almost as far back as the days of old Canaan, so wonderfully do things continue in the far East! Will Khiva gain anything through Russian "occupation," and *what* will it gain?

## CONVENT CHAPEL OF THE ASSUMPTION, KENSINGTON-SQUARE.

We give an illustration of the chapel of the Convent of the Assumption, Kensington-square. The plan consists of a nave, 27 ft. wide, without aisles, lighted by a lofty arcaded clearstory of single lancets, with a barrel-roof rising from half-vaulting over the clearstory windows. This portion of the church is devoted to the nuns' choir, and accommodates at present the young ladies under their tuition, but whom it is intended to place hereafter in the ante-chapel. Beyond the choir extends the chancel, 20 ft. deep. A simple arcade, carried on slender polished granite shafts, surrounds the high altar; and above this rises a vaulted ceiling in polished woods of two colours. To the right of the chancel extends a small apsidal chapel, and to the rear are arranged sacristies for the almoner and the sisters. At present, these portions of the design alone are finished, but it will combine, when complete, a tribune at the end opposite the altar for strangers, and a lofty bell-turret. It is, moreover, hoped shortly to replace the present temporary altar, by one, as shown in our drawing, in Caen stone and alabaster, the altar itself and tabernacle being in silver parcel-gilt, and enamelled and jewelled. The entire cost of the buildings, as at present completed, has not exceeded 2,700*l*. The contractors for the work were Messrs. Jackson & Shaw, of Earl-street, Westminster; the carving having been executed by Mr. Earp, of Lambeth; and the ornamental metalwork supplied by Messrs. Hart & Peard. The architects are Messrs. Goldie & Child.



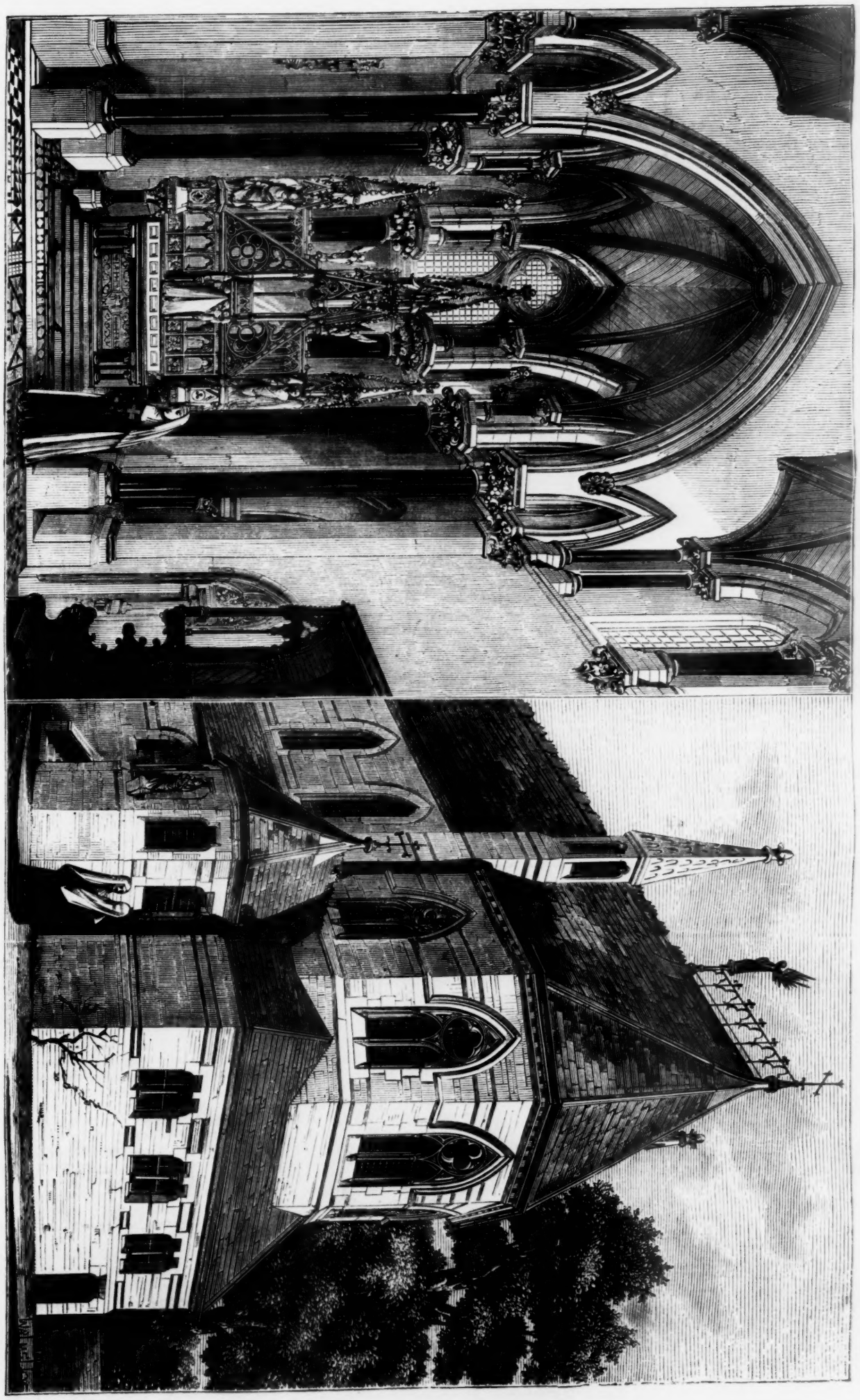

FIRST FLOOR PLAN




GROUND PLAN

TOWN HALL
BOLTON

* See p. 417, *ante*.



CONVENT CHAPEL OF THE ASSUMPTION, KENSINGTON SQUARE, LONDON.—MESSRS. GOLDIE & CHILD, ARCHITECTS.

## SMOKING AND THINKING.

AT an artistic symposium not long ago we observed three or four young gentlemen working hard for architecture, not one of them yet of age, who were smoking "like furnace," to misuse an expression of Shakspeare; and the question occurred to us, "Does tobacco impair the thinking faculties? Smoking is a habit so common that this inquiry may excite some surprise. Since tobacco has got into literature, the praise of the pipe has been both sung and said, and not a little fine writing has been expended in eulogy of it as the solace of the weary brain, and the companion of the thinker in his meditative hours. The very frequency of the practice gives interest to the inquiry, and we propose to lay before our readers some data which will enable them to answer the question. And, first, it must be recollected that whatever theory may be held as to ultimate causes, the act of thinking is a mechanical one, dependent for its due performance upon certain physiological conditions. The brain is the instrument of thought, and is a highly complex machine, of which the blood is the motive power. The process of thinking destroys a certain portion of the molecular structure of the brain, which has the power of repairing this waste by selecting appropriate matter from the vital fluid with which it is at short intervals regularly bathed. Hence it will be apparent that the healthy condition of the brain depends upon the quality of the blood, by and from which it is sustained. That which injures or enfeebles the blood, must, as a matter of course, affect the health and activity of the brain. If, then, we ascertain the physiological effect of tobacco upon the life-fluid, we shall be in a fair way for deciding the question, especially if we find individual cases confirming the views thus arrived at. There is nothing stronger in medical evidence than the agreement of physiology and pathology.

Dr. Richardson has so clearly explained the influence of smoking upon the blood, that it will be best to quote his graphic account. His scientific eminence entitles his evidence to respect, and lovers of the weed must recollect that it is a smoker to whom they are listening:—"On the blood the prolonged inhalation of tobacco produces changes which are very marked in character. The fluid is thinner than is natural, and in extreme cases paler. In such instances the deficient colour of the blood is communicated to the body altogether, rendering the external surface yellowish, white, and puffy. The blood being thin, also exudes freely, and a cut surface bleeds for a long time, and may continue to bleed inconveniently, even in opposition to remedies. But the most important change is exerted on those little bodies which float in myriads in the blood, and are known as the red globules. These globules have naturally a double concave surface, and at their edges a perfectly smooth outline. They are very soluble in alkalies, and are subject to change of shape and character, when the quality of the fluid in which they float is modified in respect to density. The absorption, therefore, of the fumes of tobacco necessarily leads to rapid changes in them; they lose their round shape, they become oval and irregular at their edges, and instead of having a mutual attraction for each other and running together, a good sign of their physical health, they lie, loosely scattered before the eye, and indicate to the learned observer, as clearly as though they spoke to him, and said the words, that the man from whom they were taken, is physically depressed and deplorably deficient both in muscular and mental power."

Tobacco modifies the circulation in the brain, as in other portions of the body. Hence, it would be remarkable indeed if it did not exercise some influence upon the mechanism of thought. "A sincere, self-observing smoker cannot fail," says M. Meunier, "to recognise that tobacco creates a new nature, more disposed to dreaming than action." Although a great smoker himself, he considered the habit was inimical to the national mind. His frequent diatribes against this *mort aux peuples* excited much raillery; but the habit of twenty years was long too strong for him. So close was the connexion between work and smoke with M. Meunier, that the amount of intellectual labour he had performed was chronicled by the extent of his consumption of tobacco. When, at last, after many fruitless attempts, he put his conduct in harmony with his opinions, it required several weeks of undivided attention to break the chains of habit which bound him. The mode by which nicotine acts upon the blood-vessels explains the apparent contradiction that it should be able to excite into momentary activity an organ which it has enfeebled and stupefied. The excitement and over-activity, which it causes in the contractile apparatus of the walls of the blood-vessels are quickly followed by a general fatigue which is only a modified paralysis. Thinking, as we have seen, is closely related with the cerebral circulation. When, by continual usage, the muscular tissue of the blood-vessels has become gradually benumbed, the blood, in place of its natural rapid flow, circulates slowly and sluggishly, and the functional energy of the brain is diminished. But with a new exhibition of the stimulant, the muscular contractility is again stimulated, the circulation becomes quicker, the brain, abundantly and regularly bathed by the life-flood, takes up again its functions, the brain-power increases, ideas flow with greater rapidity; but the activity thus produced cannot last. With this stimulation disappear the brilliant results which it had produced, and the organ falls into a relaxed condition, from which only increased doses can temporarily rescue it.

One of the results upon the brain is the loss of memory. Many authors have noticed this fact. The case of l'Abbé Moigno, the celebrated editor of *Les Mondes*, is curious. He had often been in the habit of taking snuff, which had always led to prejudicial results. After various temporary renunciations, he had returned to its use. In 1861, whilst engaged in some mathematical labours, he took from twenty to twenty-five grammes daily, and found himself continually having recourse to the snuff-box. The effect was a rapid extinction of the faculty of memory. He had learned several languages by their root words, of which he knew from 1,200 to 1,500 of each tongue, but he found that his power of recalling these words was gradually diminishing, and recourse to the dictionary became each day more necessary. Struck with this fact, he resolved to abandon the *tabatière* and cigar. Writing after six years' experience as a non-smoker, he says,—"It has been for us the commencement of a veritable resurrection of health, mind, and memory; our ideas have become more lucid, our imagination more vivid, our work easier, our pen quicker, and we have seen gradually return that army of words which had run away. Our memory, in a word, has recovered all its riches, all its sensibility. . . . . That tobacco, especially in the form of snuff, is a personal enemy of memory, which it has destroyed little by little, and sometimes very promptly, cannot be doubted. Many persons with whom we are acquainted,—M. Dubrunfaut, the celebrated chemist, for example,—have run the same dangers and escaped them in the same fashion, by renouncing tobacco, which we do not hesitate to say harms the greatest part of those who employ it, since for one smoker or snuffer who uses it there are ninety-nine who abuse it."

Memory depends upon the vigour and health of the nervous system; it is likely to be impaired by whatever causes unhealthy excitement and nervous waste. Hence if the smoker's memory fail it may be considered as one symptom of general injury of the nervous centres, from which arise other ills. The perceptive faculties become coarser, and this leads to hallucinations. Blatin quotes from Ehrhart some curious cases of this nature. M. X., forty-six years old, nervo-sanguine temperament, and in apparent good health, had often experienced embarrassment in speech and motion after indulgence in tobacco. One fine day in the country, when the air was calm, and the sun was shining brightly, he was astonished to see a heavy rain-shower which appeared to be driven towards him by a violent wind. He extended his hand. No drops were falling, his clothes were quite dry, but at the same moment he was struck with violent palpitation. He threw away his cigar, the violent beatings of his heart ceased, and the vision disappeared. Many times this phenomenon recurred. He abandoned tobacco, and the accidents quickly disappeared. Thinking himself perfectly cured, he commenced again to smoke, but the palpitations and visions reappeared. Complete abstinence was his only safety.

The step from temporary hallucination to chronic lunacy is not very great, and we find on record the case of a man who became insane, and whose recovery was due to a lucky accident which barred him from access to his usual indulgence. Druhen narrates another noteworthy case. A middle-aged man, in good health and of steady habits, was sent by his employer to Paris, charged with papers of considerable value. The importance of the trust preyed very much upon his imagination, and led to an attack of melancholy mania. He was under medical treatment about three weeks, during which time his usual desire for tobacco disappeared. On his recovery he again commenced smoking moderately. A few months after another attack commenced, and he began to talk once more of the (imaginary) risks and dangers he had encountered in his journey to Paris. Druhen saw that he was upon the brink of insanity, and his first prescription was "No tobacco." Under this *régime* the man has since enjoyed the best health.*

These facts, although curious, are not entirely decisive, for in judging by individual cases there is always a risk of mistaking the exception for the rule. There are, however, data of a more absolutely convincing nature which we commend to the careful consideration of young smokers and their parents.

In 1855 M. Bertillon divided the 160 pupils of the Paris École Polytechnique into smokers and non-smokers, with a view of testing this question. The results in the examinations of the twenty who stood highest, and those next to them, have been thus stated:—

| Smokers. | Non-Smokers. |
|---|---|
| 6 | 14 |
| 10 | 10 |
| 11 | 9 |
| 14 | 6 |
| 13 | 7 |
| 15 | 5 |
| 16 | 4 |
| 17 | 3 |
| 102 | 58 |

An examination of this table will show that whilst the non-smoking pupils exhibit a steady upward tendency, the contrary is the case with the smokers. Although the majority in numbers, they were the minority in intellectual attainments. The contrast is most instructive, and demonstrates conclusively the deadening influence of this popular narcotic upon the functional activity of the brain. If tobacco were, as its apologists sometimes claim, the handmaid of thought, a very different result must have ensued. Dr. Murray, of Newcastle, who is not an opponent, but a defender of smoking, says, "My own personal experience and observation among medical students, is supported by the results of examinations for law and divinity, smokers having been found behind non-smokers in mental calibre. So long ago as 1606, a medical writer said tobacco is not safe for the young, and should be called youths' bane." Sir Benjamin Brodie, from the result of experiments upon animals, affirms that the oil of tobacco acts by destroying the function of the brain. This, of course, refers to its administration as a poison; but who can think with coolness upon our youth, voluntarily sapping the vigour of their brains—the only organ in which we *excel* (?) the brute creation—and thus wearing out their nervous systems ere they have fairly entered upon the important duties of life?

It will be seen that medical science and statistics confirm by *à posteriori* evidence that which physiology would lead us to expect on *à priori* grounds. It would be folly to suppose that the brain, with all its minutely wonderful mechanism, should not be injured by continual contact with blood weakened and deteriorated—poisoned—by contact with the deadly principles evolved in smoking tobacco.

Smoking is now so common amongst persons of unformed constitutions, that the facts here detailed acquire a grave importance. If juvenile smoking continues and extends, we may look for generations endowed with weaker brains and duller intellects in a continued series of degradation. Let those who would not have our brave, bright, English lads degenerate into a race of dyspeptic dullards, warn them, as they wish for the full exercise of that power to think, which is their greatest privilege and glory, as they hope for clear heads and unclouded brains, to resist the dreamy seductions of tobacco.

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**Enamelled Bricks.** — It is reported that works are now being erected in Pittsburg to manufacture pressed bricks with enamelled facings. The enamel is made of various colours, to suit the tastes of architects or builders, and is impervious to water or acids, having a surface that can be cleaned like glass.

* "Druhen, du Tabac," 1867, p. 56.

## THE SALUBRITY OF HOBART TOWN, OR HOBARTON, TASMANIA.

AN important paper "On the Climate and Vital Statistics of Tasmania," by Dr. E. Swarbreck Hall, Fellow of the Royal Society of Tasmania, and an honorary member of several London societies, has been printed by the Colonial Government, along with certain tables, being, as the general title states, the "Results of five years' Meteorological Observations for Hobarton, with which are incorporated the results of twenty-five years' observations previously published by the Royal Society of Tasmania, and completing a period of thirty years."*

The paper by Dr. Hall gives the results of his long medical experience in the colony; the facts and figures, as he urges, "establishing a health character for the climate not to be surpassed by any colony under the British flag." Hobarton, it appears, is annually becoming more and more a sanatorium for invalids from the other Australasian Colonies and India.

"No city," says Dr. Hall, "could be more advantageously situated on sanitary grounds, but man's care has so far done little to obviate those hygienic drawbacks which the concentration of a city population will always produce, whatever may be the climatic and local advantages, unless special care be taken. The ozone table shows how pure the air is generally. Of records of this kind I only know one other place in the world, of which we have ozone returns, which can compete with Tasmania for aërial purity,—that is Madeira; and the registers for it available are not nearly so extensive as for Tasmania."

The city is about two miles in length and a little less in breadth, and the population cannot be considered dense; in fact, a great proportion of the houses stand isolated in their own grounds with gardens around. By the Census of 1861 there were, on the population of the whole island, 5·12 persons to every inhabited house; the Census of 1870 includes stores with houses, so that a similar calculation for that year cannot be made; but the houses in Hobarton have increased in the nine years' interval more than the inhabitants. From visitors, and the vessels in port, the mortality of Hobarton is abnormally augmented considerably. Dr. Hall gives a notable list of persons in the colony still living, though more than 100 years old. One old lady, 104 years of age, who is known to the Doctor, was in the habit of riding over the country, Peruvian fashion, till she was 100.

Dr. Hall, by the way, gives an instructive instance of the prevalence of typhoid fever in the Queen's Asylum so long as bad arrangements as to the removal of sewage prevailed and the disappearance of it on the alteration of these arrangements.

## CLEANSING AND VENTILATION OF THE LIVERPOOL SEWERS.

IN the local Health Committee, Mr. Deacon (the borough and water engineer) has presented a printed report on the condition and ventilation of the sewers of the borough. With reference to the removal of deposits, the report stated, that since August, 1871, when the work was systematically commenced, the length of sewers cleansed had been 25 miles, at a cost of about 200*l.* per mile. The work of cleansing the remaining 14 miles, all much in the same condition, would occupy about fourteen months, and the cost was estimated at 5,000*l.* The total estimated cost of cleansing all the sewers once would be 13,400*l.* It had been found, however, by a large number of examinations lately made, that the deposits removed within the last eighteen months were, in most cases, accumulating again, often rapidly, and the detailed information obtained led the engineer to the conclusion, that while, at the present rate of cleansing, the work would not be performed once in less than five years and a quarter from the commencement, in 1871, at an average cost of about 2,555*l.* a year, at the end of that time it would cost at least 2,000*l.* a year to maintain a reasonable standard of freedom from deposits. Assuming the average expenditure of 2,555*l.* per annum, for five years and a quarter from the year 1871, to be inevitable, and that when the proposed works had been carried out, an expenditure of 750*l.* a year would be necessary to maintain the sewers in good condition as regards deposits, then capitalising 1,250*l.* per annum, *i.e.* the difference between the 2,000*l.* and 750*l.* per annum, it was found that 25,000*l.* might be expended in the works proposed on economical considerations connected with cleansing alone, and altogether apart from other sanitary aspects of the case.

After alluding to the various plans of ventilation which had been considered, the engineer gave it as his decided opinion, that the death-rate, so far as it was influenced by emanations from the sewers, would invariably be reduced by opening the sewers freely by shafts in the streets, thus preventing the passage of sewer air into the houses. He recommended that from every soil-pipe connected with water-closets in houses, there should be carried up to a point above the roof of the house a pipe not less than 4 in. in diameter. In districts where water-closets of this kind exist, the draught would then be entirely down the street-ventilators and up the soil-pipe shafts; the private drains as well as the sewers would be thoroughly ventilated; and the total movement of air would be greater than could be attained by any other means. Such work would, of course, have to be performed, so far as the private shafts were concerned, at the cost of the house-owners. The report concluded with a summary of recommendations.

The cost of thorough ventilation of the sewers throughout the town is estimated at 18,000*l.*

## PROVERBS FOR GENERAL CIRCULATION.

THE present age is very much shocked at Galileo's treatment, but another age will be equally shocked at the treatment of more modern Galileos.

Take care that the man who really furnishes the nation with great ideas has the credit of them.

There are pick-brains as well as pick-pockets.

The experience of a collector is, that the cleverest men seem to have the least money. Grateful country!

If the tiger fails in his pounce, the deer escapes.

The skilful will fence with and parry a deadly thrust.

A thoroughbred dog will not yelp, even if you pluck him up by the ear.

A snarler will be sure to set other dogs snarling, and perhaps biting.

If you mean to bite take care you do not miss your mark.

Every desire is a viper in the bosom, which while he is still he is harmless, but which kindled may sting.

Resolve and keep your resolution, choose and pursue your choice.

Long habits of idleness and pleasure are hard to be cured.

Depravity is not easily overcome. Resolution will sometimes relax, and diligence will sometimes be interrupted, but never despair of ultimate success.

Throw life into a method, that every hour may bring its employment and every employment have its hour.

Vanity makes one mind nurse aversions and another actuate desires, till they rise by art much above their original state of power, and become despotic.

Compare what you have done with what you might have done.

Keep your friendship in constant repair.

A great man will never be a disappointed man.

Little men are for ever impeaching the great.

Love is not love that alteration finds, or bends with the remover to remove.

We are all endeavouring to walk, dance, or balance ourselves upon tight-ropes, and the higher these are stretched, the more numerous the spectators.

If well balanced you will walk erect and be in less danger of falling.

The English are apt to mistake magnitude for grandeur, and to think they are doing wonders, when they are only increasing the dimensions of trifling and commonplace things.

Beware of substituting quantity for quality in education.

The moral and physical worlds endure on the co-operative system. Man cannot avoid co-operation; his only alternative is to co-operate for good or for evil.

In an age of mediocrities a man a trifle higher than his fellows is often mistaken for a great man.

One great impediment to a rapid dissemination of new truths is, that a knowledge of them would convict many sage professors of having long promulgated error.

A man may be so much of everything that he is nothing of anything.

A man may learn to ride several hobbies at a time, but it will prove more astonishing than useful.

## RESISTANCE OF WOODS TO STRAIN.

PROFESSOR R. H. THURSTON, of the Stevens Institute of Technology (U.S.), communicates to the *Journal of the Franklin Institute* a description of an apparatus devised by him for determining the torsional resistance of materials, and also the results obtained by submitting specimens of different woods to experiment. By mechanism the force producing torsion is transmitted through the test-piece, and moves a pencil which traces upon paper a curve the ordinates of which are proportional to the torsional moment, while its abscissus represents the amount of torsion to which the specimen has been subjected, thus indicating the relative stiffness, strength, and resilience of the material experimented upon very perfectly. The test-pieces were seven-eighths of an inch in thickness at the middle or smallest part. Some of the conclusions drawn from the results are as follow:—White pine yields quite rapidly as the torsional moment increases. The maximum strength of the test-piece was 15½ foot-pounds, and it was twisted completely off at a total angle of torsion of 130°. The substance is thus shown to have little resilience. Yellow pine has much greater strength, stiffness, and resilience. The sap-wood is equally stiff with the heart-wood, but sooner passes its limit of elasticity. Spruce is less stiff than white pine even, but possesses greater strength and resilience, its moment of resistance reaching 18 foot-pounds and twisting through a total angle of torsion of 200°. Ash seems to be weaker and less tough than is generally supposed. Its most striking peculiarity is its very rapid loss of strength after passing its limit of elasticity. Spanish mahogany is very stiff and strong. It is deficient in toughness and resilience, losing its power of resistance very rapidly after passing the limit of elasticity. White oak has less torsional strength than either good mahogany, locust, or hickory, but is remarkable for its wonderful toughness. It passes its limit of elasticity at 15°, but loses its resisting power very slowly. The latter remains unimpaired to a torsion of 70°, and yields completely at 253°. Millwrights are evidently correct in holding this wood in high esteem for strength, toughness, and power of resisting heavy shocks and strains.

## THE GOVERNMENT AND IMPROVED DWELLINGS.

AT the adjourned discussion by the Special Dwellings Committee of the Charity Organisation Association on Mr. Storr's motion in reference to the State assisting in providing improved dwellings for the industrial classes, the following modifications of the original motion were adopted:—

"That as the extensive clearances of late years in London, whereby overcrowding has been so much aggravated, have been in a great measure produced by the compulsory powers conferred by Acts of Parliament, similar compulsory powers should be given for acquiring sites in districts mainly occupied by the industrial classes, in which the ordinary sanitary requirements are found to be impracticable, in order that they may be laid out for building proper dwellings for the same classes on a comprehensive plan.

That pending the creation of a central municipal Government for London, it is expedient that the Corporation of London and the metropolitan Board of Works should be empowered, either separately or conjointly, to collect information as to the parts of London most requiring reconstruction, and to apply to Parliament to acquire sites in such parts compulsorily or others in suitable localities by agreement, and gradually to dispose of them to companies and individuals, under proper restriction, for the erection of dwellings for the industrial classes, and for power themselves to erect such dwellings to a limited extent in case it should seem to them expedient.

But that in any Act for the general government of London, provision should be made for the immediate transfer of all such powers, and of all assets and liabilities acquired or incurred under them to whatever governing body may be constituted."

The committee then adjourned over the Whitsuntide holidays to Wednesday, June 11th.

* Compiled from the Papers and Proceedings of the Royal Society of Tasmania. By F. Abbott, F.R.M.S. Barnard, Government Printer, Hobart Town.

## PROPOSED STATUE OF SIR WILLIAM TITE.

THE Chelsea vestrymen have had under their consideration a proposition from Sir Charles Dilke, bart., the member for the borough, addressed to the chairman of the Board, as follows:—

"Dear Mr. Livingstone,—I think that, as Sir William ite was the best known of the originators of the idea of Chelsea Embankment, some sort of memorial to him might, with propriety, be set up there. If this suggestion meets with the approval of the vestry, I should, as a parishioner, well acquainted with Sir William Tite, both in his public and private capacity, be glad to be allowed either to contribute 100*l.* for the construction of a mural granite memorial drinking-fountain, if the Chelsea Vestry could find a suitable site, and decide to erect one, or as I believe the Metropolitan Drinking Fountain Association contemplate replacing the detached fountain which formerly stood at the bottom of Oakley-street, I would give 100*l.* to cover the additional expense which might be caused by constructing such detached fountain in a memorial shape, and inscribing Sir William Tite's name thereon. I am, &c., CHARLES W. DILKE.

A. Livingstone, Esq., Chairman of Chelsea Vestry."

The Chairman remarked that the offer of Sir Charles Dilke was a very generous one, and he trusted the vestry would take action in the matter.

Mr. Birch said a preliminary meeting had already been held upon this subject, and that meeting considered Sir William Tite had done much for the parish and that great improvement the Chelsea Embankment. The Chelsea Embankment was entirely due to Sir William Tite's exertions, and the meeting he referred to were unanimous that a memorial should be erected to so great a benefactor to the parish, and so eminent an architect. He would be glad to move that 100 guineas be devoted towards a memorial of Sir William Tite, and he was quite ready to give his five guineas to the same end, and he was confident other members of the vestry would follow his example. He would also move that a reply be sent to Sir Charles Dilke, M.P., thanking him for his offer, and asking him if he would allow his subscription to go with others which would be collected, in order that a statue should be erected to Sir W. Tite on the Chelsea Embankment.

Mr. Cox, builder, seconded the motion; and after an amendment had been proposed and lost the original motion was carried by 27 to 6; and Mr. Birch then moved that at the next vestry the sum of 100 guineas should be appropriated for a monument to Sir William Tite, and a committee formed to collect further subscriptions and to carry out the design; and Mr. Lahee, the vestry clerk, cheerfully consented to act as hon. secretary.

In connexion with the above, it is stated that the Members of the Metropolitan Board of Works are also taking action, so that it is highly probable the late Sir W. Tite will have a statue.

## THE LEICESTER MUNICIPAL BUILDINGS COMPETITION.

A CERTAIN number of architects have condescended to respond to the second invitation from the authorities of Leicester for designs for Municipal Buildings. We hold to the opinion we have before expressed, that the author of the design selected in the original competition ought, in justice, to have been employed to prepare designs to meet the altered site and arrangements.

## THE NEW COURTS OF JUSTICE.

MR. GREGORY, in the Commons, has called the attention of the House to the delay in the construction of the New Courts of Justice, and moved that such delay was prejudicial to the administration of the law, and to improvement in procedure.

Mr. Ayrton, in course of a long speech, said it was not until the 27th of February, 1873, that the Office of Works was put in a position to invite tenders for the purpose of constructing the buildings. Those tenders were received on the 25th of March last; and after having been carefully considered, the very lowest of them was found, in the judgment of the Office of Works, to have greatly exceeded the sum which had been prescribed. He contended that no time whatsoever had been lost, and that there was no justification for the charge of delay. As he had pledged himself not to bring forward the estimate until the course intended to be taken had been decided upon, any hon. member would have an opportunity of taking the opinion of the House on the subject before any expenditure was incurred. He thought this was the best footing on which to place the question.

Mr. Beresford-Hope said the right hon. gentleman had given the House a very discursive and interesting lecture, but he had not met the point which had been raised. He thought that the architect had been made a scapegoat of, for the benefit of those who sought, in connexion with the new courts, only to consult their own convenience and comfort.

WHILE much disappointment is felt in consequence of the delay in providing proper courts of law, the general objection entertained in respect of the design for the principal front prevents any strong expression in favour of immediate progress. We should be false to our trust as representing the public if we were to urge the Government immediately to carry out that design. Mr. Street, by unwisely persisting in retaining an arrangement next the Strand which, if put into stone, could not fail to be unsatisfactory in effect, ties the hands of a large number who would otherwise gladly aid in endeavouring to prevent injury to the building by unwise economy.

We renew our entreaty that a model should be immediately prepared, or, if already prepared, submitted to public scrutiny.

## METROPOLITAN IMPROVEMENTS.

THE Vestry of St. Marylebone are about to consummate a long-projected improvement at the east end of the parish by the continuation of High-street and Thayer-street through James-street to Wigmore-street, and so on to Oxford-street, thus clearing away a *cul-de-sac* in James-street, long a squalid dirty locality, and a source of great nuisance to the neighbourhood, and opening out a line of thoroughfare from the Regent's Park and Marylebone-road to Oxford-street. It is proposed to construct the street 60 ft. in width, and lay out the surplus land suitably for private residences of first-class character embracing all the modern requirements. The works will be commenced immediately, under the direction of Mr. Eales, architect, and an early completion of this important improvement may now be looked forward to.

The vestry have also under consideration a plan by Mr. Eales for another very great improvement at the west end of the parish, long needed, viz. the levelling up, widening, and opening out Little James-street,—or "Little Hell," as it is more familiarly called in its locality,—also Charles-street, Lisson-grove, into Devonshire-street and Salisbury-street, making a continuous thoroughfare from the Marylebone-road to New Church-street, and opening out the east end of Manning and Suffolk Places. This, with the new schools about to be erected by the London School Board in Bell-street, will be a great improvement, morally, socially, and sanitarily, and therefore most desirable to be carried into effect as speedily as possible.

## ST. MARK'S CHURCH, WALWORTH.

THIS church, of which the foundation stone was laid last week, will be built in East-street, Walworth-road. The principal entrance to the church will be from the front in East-street, or what would be the west end of the nave if the building was placed with the chancel at its east end; this, however, will not be the case, owing to the shape and position of the site. Over the entrance will be four lancet windows, and above them a large traceried rose-window, 11 ft. in diameter. On the apex of the gable of the roof will be a bell turret for two bells rising to a height of 100 ft. from the ground.

The nave will be 37 ft. wide and 98 ft. long, with aisles on either side, only 7 ft. wide. This departure from ordinary proportions of nave and aisles has been adopted, in order that the stone piers or columns, supporting the arches, may not obstruct the view of the pulpit from the congregation.

The new church will contain 600 sittings in the nave and chancel, in benches, with sloping backs, and there is a space for 150 in the narrow aisles on chairs, which will be so disposed, that the pulpit can be seen from all.

The chancel will be 32 ft. deep, the choir in part nearest the nave will be 37 ft. wide, the organ will be placed in a recess at one side, and at the back of the instrument will be the vestry, about 12 ft. wide by 17 ft. long.

The sanctuary will be 12 ft. deep and 30 ft. wide; over the altar will be a 5-light tracery window.

The roof over the nave will be wagon-shaped and boarded, the height of its apex will be 50 ft.; the exterior height to the ridge of the roof will be 65 ft. As there will be no clear-story, the aisle walls will be 27 ft. high, in which will be placed lancet windows.

The nave will be separated from the aisles, by octagonal stone piers, 2 ft. 4 in. diameter, supporting pointed arches of red brick. The walls will be faced both outside and inside, with yellow stock bricks. The arches to the doors and windows will be of red brick; the dressings will be of Bath stone.

The style of architecture, of which the details will partake, is English Gothic of the Geometric period.

The contract has been taken by Mr. Thompson, of Camberwell, for the sum of 4,778*l.*; and it is anticipated that the total cost of the building will not exceed 7*l.* per sitting, including the expenses of heating apparatus and fittings for lighting. The architects are Messrs. Henry Jarvis & Son.

## ST. MARY THE VIRGIN, CROWN-STREET, SOHO.

THE new chancel is now completed, and forms the first division of the work of rebuilding the old church, from the designs of Mr. R. Herbert Carpenter and the late William Slater. The proportions have been made as large as the site would permit, the clear inside width being 36 ft. The east end is in Crown-street, and the south side is next a narrow court, while the north side adjoins the lofty clergy-house. The general idea has been to support the groining on massive buttresses, with thin walls between, the buttresses showing both inside and outside, thus gaining an effect of solidity; the bays being necessarily much narrower than the span, the groining is sexpartite and domical, constructed of red bricks with stone ribs. The height from the floor to the crown is 60 ft., and to the ridge of the high-pitch roof above is about 85 ft. The walls, both inside and outside, are of red brick, with stone stringcourses, windows, &c. The eastern group of five lancet-lights are placed at a height of 30 ft. from the floor, and allow for a reredos on a grand scale, of which the central figure of "Our Lord reigning from the Tree," is being executed in white marble, by Miss Grant. The side windows on the south are coupled lancets, with a sexfoiled circle over. On the north the organ will stand, which is now in hand by Messrs. Walker, and under which the vestries are entered. A small window in the oratory of the clergy-house is arranged high up in the north-east bay. The altar-table is raised twelve steps above the level of the future nave. The steps and pavement generally are of red Mansfield and Portland stone, but inside the sacrarium the floor is Minton's mosaic; and the altar itself stands on three steps of Derbyshire and Devonshire marble, with a re-table wall behind of alabaster and marble, executed by Mr. Forsyth, as are also the sedilia. The contractors were Messrs. Gibson, of Southall, under Mr. Boulder, as clerk of works.

The rebuilding of the north side of the nave and the north aisle is already commenced, as well as the schools, which will adjoin the clergy-house and the north aisle. Mr. Gough, of Chelsea, is the contractor.

## PRIZE WORKS CHOSEN UP TO THIS DATE FOR THE ART UNION OF LONDON.

*From the Royal Academy.*—"Gretchen Leaving Church," R. Thorburn, 150*l.*; "Missing," Miss E. Thompson, 80*l.*; "Emissaries of the Long Parliament," &c., E. Opie, 70*l.*; "Just Awake," A. Stocks, 60*l.*; "A Highland Pine Forest," F. S. Reynolds, 52*l.* 10*s.*; "A Mountain Tarn," R. Farren, 52*l.* 10*s.*; "Among the Lilies," F. G. Cotman, 50*l.*; "Hambledon Common, Surrey," A. Powell, 45*l.*; "A Creek on the Shannon," A. Hartland, 40*l.*; "A Rich Corner," W. S. Jay, 40*l.*; "Glyder Fawr," W. L. Kerry, 35*l.*; "Pleasing Reflections," N. O. Lupton, 35*l.*; "The Angler's Nook," A. J. Stark, 30*l.*; "Dawn in November," E. Jennings," 30*l.*; "Contested Authority," N. Tayler, 26*l.* 5*s.*; "The Missing Playfellow," Miss E. Clacy, 25*l.*; "December—Derbyshire," F. Foottit, 21*l.*; "The Thames at Hampton," A. A. Glendening, 20*l.*

*From the Society of British Artists.*—"The Ballad," J. J. Hill, 100*l.*; "The Seaside," E. J. Cobbett, 85*l.*; "A Day after the Fair," W. Hemsley, 60*l.*; "Grandad's Vanity," Wells Smith, 50*l.*; "Highland Cattle by the Side of Loch Leven, Ballachulish," C. Jones, 45*l.*; "Sunday Morning," R. Redgrave, R.A., 45*l.*; "A Wild Night on the Yorkshire Coast," J. W. McIntyre, 40*l.*; "A Short Cut," A. F. Patten, 35*l.*; "Left in Charge," Edwin Roberts, 35*l.*; "I see you," F. Morgan, 31*l.* 10*s.*; "A Dewy Morning," T. F. Wainewright, 30*l.*; "Returning from Labour," J. Peel, 30*l.*; "St. Michael's Mount, Cornwall," J. J. Wilson, 30*l.*; "Harrop Tarn, Cumberland," A. Cottrell, 26*l.*; "Queen Guinevere," &c., Mrs. Charretie, 26*l.*; "On the Lesser Neath," J. B. Smith, 25*l.*; "Distant View of Barmouth Estuary, North Wales," B. Rudge, 20*l.*

*From the New British Institution.*—"Baron Munchausen relating his Adventures," R. Hillingford, 140*l.*; "The Tamar at Endsleigh," A. B. Collier, 50*l.*; "Waterfall, Vale of Neath," J. B. Smith, 31*l.* 10*s.*; "Lower Lake, Ugbrook Park, Devonshire," W. C. Jay, 25*l.*; "The Hill of Hight, North Wales," A. de Breanski, 25*l.*; "The Pandy Falls on the Mancho, North Wales," J. Godet, 20*l.*

*From the Crystal Palace Picture Gallery.*—"Court of the Fish-Pond, Alhambra," J. Dobbin, 30*l.*; "Returning Home," J. C. Thom, 30*l.*; "View of St. Remo," E. Myers, 20*l.*

*From the Society of Painters in Water-Colours.* "Early Morning Effect on Ben Nevis," H. B. Willis, 100*l.*; "Low Tide on the Shore, Tor Cross, S. Devon," Collingwood Smith, 42*l.*

*From the Institute of Painters in Water-Colours.* — "In Hartingcombe," the late G. Shalders, 45*l.*

*From the General Exhibition of Water-Colour Drawings.*—"Coming from the Spring," C. S. Lidderdale, 40*l.*; "Cornfield, Godalming, Surrey," A. Powell, 20*l.*

*From the Royal Scottish Academy.*—"Near Broadford, Skye," Rev. R. G. Fraser, 40*l.*; "Loch Ranza, Castle Arran," W. B. Brown, 45*l.*

## ARCHITECTURE IN CHICAGO.

THE rebuilding of Chicago, since its destruction by what the Yankees are pleased to call the "champion blaze of creation," has proceeded with such rapid strides, that nearly the whole city is already restored. Night has been turned into day in the endeavour to rebuild the city; and since the last flame was extinguished, hardly a moment seems to have passed when the noise of chisel and hammer, of saw or axe, could not be heard in some of the many vast edifices that have been erected since the catastrophe.

The Americans are not to be beaten for *size* in anything. Their continent is the vastest, their rivers are the mightiest, their mountains the highest, their forests the biggest, their buildings the roomiest in the world, and their aspirations are higher and more ambitious in proportion. Then the rapidity with which they do everything is extraordinary. Surely the earth does not revolve more quickly in the new than the old world! No sooner is an idea started, than it is carried into execution. They never seem at a loss in the gravest emergency. The board which was displayed on the site of one of the burnt houses on the day after the fire, with the words, "All gone but wife and children. Energy!" roughly painted on it, is a fair specimen of the dauntless spirit that seems to animate every individual person in the nation. In one sense originality is their *forte*, but this is mainly displayed in their efforts to make money in their commercial enterprises. The man who invented "wooden nutmegs," was a genius. He who makes fresh oysters of flour paste and tapioca and salt water, is worthy of a public statue in his honour, if ever such originality deserved such a recognition.

But in matters not immediately affecting their "commerce," their supply of originality is very scanty. The style of their buildings will illustrate our meaning. The first object of an American merchant is to have a house wherein to carry on his business; his chief aim then is to have it as convenient as possible; his next wish is to have it as big as possible: no matter about its architectural appearance as long as it fulfils these two requirements. Certainly in a few of the more important public buildings, the Americans like to have a little ornamentation, but their originality in the matter of architecture seems very limited. In the May number of the *Land Owner* of Chicago, a journal "devoted to real estate interests," the world is presented with a series of fourteen of the designs which were sent in by Chicago architects in the competition for the New City Hall and Court House, for which in all about fifty plans were submitted.

The drawings represent merely the perspectives of the various buildings, so that it is impossible to judge as to the accommodation afforded inside. In this respect, however, many of the plans are very far from perfect. In regard to the lighting, for instance, in most of them many of the inner rooms are lighted by corridors, and do not receive any direct window-light. This is a great defect in such a building as a County Court House and City Hall, and is remedied in one only of the plans submitted,—and this has been selected as the most suitable. Here the plan of the building is in the form of a Maltese cross, the principal entrances being at the four extremities of the cross. Herein lies, so far as can be ascertained from the fourteen illustrations submitted in the *Land Owner*, the only original or novel idea in the design of any of the buildings. The engravings themselves are, however, executed in the worst style of art, and we must charitably suppose they do not fairly represent the ideas of the Chicago architects, though such expressions as the following, which are sown broadcast throughout the number, would lead to a very different opinion concerning their merits. Speaking of the plans, the editor says:—"Our artists have been extremely busy for the past month at work on these plans, and we present our readers in this issue with the first series of them, engraved, at great expense, expressly and exclusively for the *Land Owner*. A journal which has never yet been baffled in its endeavours to please the public certainly could not be kept out of Kentucky block, even if the newspapers of smaller circulation were forbidden to enter. We have no fear that our enterprise will not be appreciated, and that our large outlay to engrave these plans will be amply repaid by the public estimation of our work."

In another place we read,—

"There is not a building on the Continent of Europe that compares with the 'Exchange' building, on the Court House-square. And what is Pitti Palace when one has seen Mr. Schweitzer's block, at the corner of Madison and La Salle streets? Buckingham Palace is a mere shed beside some of our grand buildings that were commenced in the air, and settled gradually to the earth by the accommodating Jack-screw. Could Michelangelo return to earth, and visit Chicago, he would mourn because his lost eyesight would not enable him to see that marvellous work of architect Boyington, the Pacific Hotel, and as the old man wept while running his fingers over the Torso in the Vatican, because he could not see it, even so he would burst into tears while picking his way through the narrow doors of this great architectural wonder. . . . The woodcuts in the *Land Owner* are fine. They were engraved by masters of the art, than whom no worse butchers of costly box-wood ever lived in any age, and into whose brains the spirits of all wood-choppers congregate, as soon as released from earth. . . . . We say it positively, there has never been anything produced in Europe that compares with our woodcuts."

We may be wrong, but we doubt if the majority of the engravings in the *Land Owner* are woodcuts at all. They look like the production of some patent Yankee dodge, which enables so many pages of paper to be covered with "illustrations" in the shortest imaginable space of time. If they are really woodcuts, the editor is not far wrong in stigmatising his artists as real "butchers of costly boxwood." It is impossible to judge as to the detail of the architecture. The various styles of the fourteen designs may be classed as,—Gothic, 1; Classic, 3; the others are to all appearances an agglomeration of various styles, incongruously jumbled together.

The windows are generally arranged in rows, without the least attempt at ornamentation or variety of design, just like the windows that are placed in so many rectangular holes in the walls of a Birmingham, Sheffield, or Manchester factory,—all built to let in an equal amount of light, and that is all. But, setting aside the utter unintelligibility of the detail as here represented, there is not one of them that presents in any degree what may be called an effective appearance as a whole. Novelty there is none. There is hardly a design that does not represent the following leading features:— The four corners of the square building are in nearly every case surmounted by one or more pinnacles or domes apiece. Some of the drawings represent smaller additional towers on each side of each entrance. Half of them have a tower or dome springing from the centre. In one case a column, surmounted by a winged beast, takes the place of a tower. The rest have a principal tower,—some two,—springing from some other portion of the building, all meaningless in design, and evidently piled up with the simple object of making something high. Several of these towers resemble an extinguisher, which, in some cases, has the apex cut off, and railings placed round its upper edge. A gigantic needle protrudes from the summit of one. The solitary Gothic design presents us with two weak imitations of the clock-tower of the Houses of Parliament; while the architect of one of the Classic edifices has made a long shot at the dome of St. Paul's Cathedral, aiming at the sublime, and producing the ridiculous. There is only one design that dispenses with the extrinsic aid of showy pinnacles, and presents a single tower of any merit; and this is the only building that is not approached by one or more flights of steps.

One architect would have his main entrance reached by two narrow semicircular flights of steps, guarded with railings, similar to those one sees leading from the street into the limited "area" of one of our London houses.

Such is an outline of the general appearance of Chicago buildings, and we are bound to say they are not very satisfactory. Buildings may be run up fast enough, but architecture is not to be produced at the same pace. Our words are not intended as reproof, but advice.

## DROVERS' HALL AND ASYLUM.

THE first portion of this building, which is being erected on the north side of the Cattle Market at Islington, between the large buildings of the corporation now used as dwellings, is nearly completed, and will shortly be opened by the Lord Mayor.

It will, when finished, consist of fifteen suites, of three rooms each, on two floors, for aged and infirm drovers, also committee-room, &c.; and in the rear is a hall, 60 ft. by 33 ft., and 27 ft. high, intended for a reading and club-room, where the men who are occupied in the adjoining market may hold their meetings.

The interior of the hall is lighted by circular-headed windows, under an arcade formed of Pether's ornamental pressed bricks, resting on coupled pilasters of white bricks, with stone foliated caps and bases, and these again resting on a dado of ornamental tiles, executed by the Architectural Pottery Company, between a plinth and surbase of Portland cement.

The ceiling is wagon-headed in stencilled panels, and partly open-timbered, stained and varnished, each truss resting upon the coupled pilasters. A raised daïs at one end will afford the opportunity for the delivery of lectures and other means of improving this class of our fellow-creatures, who need it not a little.

The architects are Messrs. Lander & Bedells, of John-street, Bedford-row; and the contractors are Messrs. Mansbridge, of Camden-town.

## THE LONDON SCHOOL BOARD.

MR. CHARLES REED, M.P., chairman of the Works Committee, brought up a report to the Board, May 21st, which was ageed to, including the following as to tenders:—

"The Works Committee invited Tenders for the erection of a school to provide accommodation for 1,066 children, on the site in Rolls-road, Southwark. The following were the respective amounts:—

| | |
|---|---|
| J. Tyerman | £8,990 |
| W. T. Nixon & Son | 8,898 |
| W. Higgs | 8,860 |
| G. Stephenson | 8,614 |
| J. H. Tarrant | 8,594 |
| J. Kirk | 8,445 |
| Scrivener & White | 8,340 |
| Newman & Mann | 8,250 |
| B. E. Nightingale | 7,998 |

The Board architect, however, was subsequently instructed to make certain modifications in the plans, so as to reduce the cost of the building, and a revised tender has now been obtained from Mr. B. E. Nightingale, of Albert Embankment, Lambeth, amounting to 7,718*l.*, which the committee now recommend the Board to accept. Cost of site, 1,600*l.* Cost of building per head, 7*l.* 4*s.* 9*d.* Tenders have also been invited for the erection of a school to accommodate 1,109 children on the site in West-street, Hackney. Subjoined is a list of the amounts:—

| | |
|---|---|
| A. Sheffield | £7,975 |
| G. Limn | 7,960 |
| W. Shurmur | 7,750 |
| J. Sewell & Son | 7,520 |
| J. F. Sargeant | 7,480 |
| J. Perry & Co. | 7,450 |
| Wicks, Bangs, & Co. | 7,390 |
| T. Ennor | 7,172 |
| Parsons, Brothers | 6,998 |

As a tender of Messrs. Parsons, Brothers, however, was accepted last week for the erection of the Old Castle-street, Bethnal-green, school, and as a previous tender has already been accepted for the enlargement of the Hornsey-road, Holloway, school, Messrs. Parsons have decided to withdraw from this competition in order to devote the better attention to the two schools already in

their hands. The committee accordingly recommend the acceptance of the next lowest tender, that of Mr. Thomas Ennor, of 1, Devonshire-place, Commercial-road, E., amounting to 7,172*l.* Cost of site, 1,502*l.* 0s. 3d. Cost of building per head, 6*l.* 6s. 2½d."

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At the Board meeting, held at the Guildhall, on the 28th of May, Mr. Charles Reed, M.P., brought up the following report, which was accepted:—

"On the 15th January last, the Board instructed the Works Committee to obtain tenders for the erection of the New Offices to be built on the Thames Embankment site. Invitations have accordingly been sent out to eighteen builders, four of whom have been unable to tender. The amounts of the tenders are as follows:—

| | |
|---|---|
| George Myers & Sons | £21,500 |
| Scrivener & White | 20,710 |
| Peto, Brothers | 20,630 |
| Dove, Brothers | 20,575 |
| Clarke & Bracey (late Axford & Whillier) | 20,336 |
| P. Horsman | 20,311 |
| J. Sewell & Son | 20,001 |
| W. Brass | 19,825 |
| W. Higgs | 19,747 |
| Jackson & Shaw | 19,583 |
| Newman & Mann | 18,741 |
| J. Perry & Co. | 18,617 |
| J. M. Macey | 18,293 |
| Cooke & Green | 18,281 |

The committee recommend the acceptance of the lowest tender, that of Messrs. Cooke & Green, of Marlborough-street, Blackfriars-road, S.E., amounting to 18,281*l.* The time fixed for the completion of the building is the 31st of March, 1874. Amount of tender already accepted [for excavation on the site, 617*l.*; for putting in the concrete foundations, &c., 1,575*l.*

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## ALEXANDRA PALACE AND PARK.

The long-talked-of opening of the Alexandra Palace took place, as we notified it would, on Saturday last, without any ceremonial, and with less bunting than might have been used on such a bright day, and, for that part of London, so important an occasion. A very large number of persons were assembled, and a concert by eminent artists was given, which doubtless afforded pleasure to those who could hear it. This, we are bound to say, was not our case, or the case of a very large proportion of those present. In time, however, the directors will doubtless find out how to arrange the building for the conveyance of sound. The theatre, which we have already described at some length, was not put to use on the opening day. A flower-show served to brighten up part of the nave. A few good pictures and statues have been collected; and there seem to be plenty of dining-rooms and so forth for the refreshment of the outer man,—not the *inner*, as some folks erroneously say. We may have opportunities to look into the arrangements hereafter.

A view of the exterior of the building will be found in a previous volume of the *Builder*, and it is entirely the fault of the managers that we do not give a view of the interior in our present issue.

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## ACCIDENT IN MANCHESTER.

Sir,—A new danger menaces us in our streets. Time was when, the Iron Duke being in power, and serious opposition offered to his measures, he threatened to quell it by placing a cannon in every street of the metropolis. The threat thus made was, however, enough to provoke, as it did, more powerful opposition still, and the Iron Duke was removed, "hoist with his own petard." Since his time, Englishmen have seldom, if ever, experienced the peculiar feeling incident to "looking into the cannon's mouth" in the streets of their own towns; and in the latest instance even, which I am now about to relate, the "pleasure," if one may call it so, of that operation, was denied to the spectators mainly because they were at the time unaware that the instrument under notice was possessed of "cannonical" properties.

Those of us who happened to be in the principal business portion of the city of Manchester about three p.m. on Tuesday, May 13th, were startled out of our usual propriety by the sound of a violent explosion as of a large piece of ordnance, proceeding from the neighbourhood of Deansgate. Being market-day, a large crowd was soon collected on the spot where the "accident" had occurred, and the first circumstance which claimed attention was the removal in cabs to the infirmary of some nine persons, all of whom were burnt, some badly; and of these, one, a plumber sixty years of age, and another, a boy of fourteen, have since died of their injuries. On investigating the matter, it appeared that at the junction of St. Mary's-gate and Deansgate, where the latter thoroughfare has been recently widened and paved, the gasfitters to the corporation of the city were engaged in effecting an alteration to their street main which runs at that point under the flagging of the sidewalk. From some fault in the main itself, water collects therein, and to remedy this defect, it was proposed to attach to it a large iron tube 9 ft. long and 4 ft. internal diameter capped at both ends, and which is technically termed a "syphon pot," although it appears to partake of neither the character of syphon nor pot, but rather of a tank or reservoir for the waste water. The hole was dug ready for the "pot," which lay lengthwise in the street alongside at a distance of about 10 ft. from the hole. The caps were "luted" and screwed in position, one end being secured by four bolts only, and the "pot" was then connected with the "main gas-pipe" by means of a 1¼-in. iron pipe, for the purpose of filling and "testing as to the leakage of the joints."

This was a very interesting operation to spectators, many of whom flocked around as closely as the slender single-rope barrier would permit, which was very close indeed. The removal of a screw plug in the upper side of the "pot" allowed the escape of air, which was supposed to be driven out by the inflowing gas; and when this was done to the satisfaction of the foreman, he screwed in the plug, and allowed the gas to accumulate pressure within, when, lighting a piece of tarred rope, he applied it around the joints of his "caps," and pronounced them all satisfactory. Directing a workman to disconnect the supply-pipe from the main, he jumped into the hole in the ground. The workman did as directed, and the instant the pressure was taken off, the explosion I have named takes place, forcing off the four ¾-in. bolts which held the cap in position, and projecting the cap,—itself weighing some 10 cwt.,—a distance of 40 ft. along the street, and producing the injuries to the persons (all of whom were spectators) already mentioned.

People in Manchester are asking where the common sense of the gas authorities was to permit the testing of so dangerous a contrivance in the middle of a crowded thoroughfare, at the busiest part of a market-day, to the destruction of human life and person, when the work could have been better done after the work was all fixed in position. *Accidents* have occurred before with the work of the same men as were employed here, and this should have made all concerned doubly cautious in their proceedings. Let us hope, at least, that we have seen the last improvised "cannon" in our streets. E. G.

*Erratum.*—In letter on "Extinguishment of Fires," for "*finest* steam fire-engine in America," read "*first* steam fire-engine in America."

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## CEMENTS.

Sir,—In reply to your correspondent's question in your last issue, Roman cement should have answered his purpose, though it is not ultimately so strong as Portland. It has, however, for special cases, two advantages over the latter cement—namely, that of being very quick setting, and of attaining its maximum strength in a short period.

The best Roman cement is of a brown colour, the ordinary black Roman being inferior in quality. It should set in about ten minutes.

Your correspondent should have used clean washed gritty sand, and if his Roman cement had been good, the result would have been satisfactory. Experience.

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## LAND LAWS.

Sir,—Whilst the debates on the English land laws occupy the attention of our Parliament, might not Lord Cairns and Lord Selborne be pleased to remember that many highly intelligent and noteworthy witnesses in actions of ejectment relating to *mort d'ancestour* may labour under consumption,—a very general disease in Great Britain,—and usually die at the age of thirty-five years, or a little later. Should such necessary evidence of life's duration be utterly ignored and forgotten by the two Houses of Parliament in so important a question of English welfare, and security for invested capital? No witness can be everliving, or always found if emigrant.

M. W. H.

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## COMPETITION COMMITTEES.

Sir,—If you are not tired of hearing of the tricks of competition-committees, it is perhaps as well you should be posted up with their latest doings. In the beginning of last year a body of gentlemen advertised for designs for an idiot asylum at Starcross, near Exeter, offering the munificent reward of 10*l.* for the best design. I dare say you will say no matter what treatment I receive for taking any notice of such a tempting bait. However, relying on the known straightforwardness and honour of one of the committee, I did prepare designs, which obtained the premium aforesaid, Mr. Rowell, of this town, being among the unsuccessful competitors. Now the building is about to be commenced, this committee coolly give my designs to Mr. Rowell to prepare working drawings, &c., and to carry out, although not only was he an unsuccessful competitor, but had before given the committee designs which proved unsuitable, hence their advertisement.

*Newton Abbot.* John Chudleigh, Jun.

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## COMPETITIONS.

*School Board, Wellington, Salop.*—In a limited competition for the proposed new schools to be erected at Hadley by the Wellington School Board, the plans of Messrs. Bidlake & Fleeming, of Wolverhampton, have been selected. The plans and specification have been approved by the Educational Department, and the architects have been instructed to obtain tenders.

*Schools at Yeovil, Somersetshire.*—There were eighteen sets of plans sent in by various architects; these were at first reduced to five, and then to two. Eventually the Board decided to adopt the plans marked "Practical," which proved to be by Messrs. Reade & Goodison. The work is, we believe, to be at once carried out under their direction.

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**National Health Society.**—The annual meeting will be held, at 1, Adam-street, Adelphi, on the 12th of June, at three o'clock, to receive the report of the executive committee, and to elect the general and executive committees. After the meeting Dr. R. Liebreich will read a paper on "School Hygiene."

## OFFICIAL ECONOMY.

Sir,—You are aware that the new Home and Colonial Offices are now rapidly approaching completion, and the masons are engaged in carefully carving and cleaning down the stone front. Will it be believed that Mr. Ayrton not only proposes to keep up the houses in Parliament-street, which are closely attached to the new building, but has actually just relet one for a dining-room and restaurant! The effect, of course, will be that the carving and stonework will be inevitably choked and stained with soot during the ensuing winter, and ten times the value of the rent obtained will be lost in permanent blackening of the building. This is economy with a vengeance.

I should think the architects would have something to say as to the First Commissioner's speech of last Friday in the House of Commons; anything more offensive than his expressions towards Sir Gilbert Scott and Mr. Street can hardly be imagined. A. B. C.

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## THE TRADES MOVEMENT.

*Bedford.*—The carpenters and joiners are agitating for an increase of wages. The present rate of pay is 5d. an hour, or 25s. per week, and it is thought by some of the men that, in view of the increased demand for labour in preparing for the Royal Agricultural Society's show next year, the scale should be raised.

*Middlesbrough.*—The joiners have sent a circular to their employers asking for an advance of 3s. per week, and reduction in the hours of labour from fifty-three to fifty-two per week.

*Oswestry.*—A strike has taken place amongst the stonemasons engaged in the restoration of the parish church. They have been receiving 28s., but now demand 30s. Their hours were sixty-seven and a half, and they ask for a reduction of one hour. The contractor declines to accede, and twenty-five hands have left work.

*Birkenhead.*—The stonemasons of Birkenhead and the neighbourhood have struck work for an advance of wages from 33s. to 36s. per week. Some of the employers have since conceded the request of the men. Most of the builders of Birkenhead are still standing out against the demands of the joiners, who struck for an advance of 4s. 6d. per week. A meeting of employers in the building trade (Mr. Henry Fisher in the chair) has been held in the Park Hotel, Birkenhead, to consider the demand of the masons for an advance of 3s. per week, when it was resolved to adhere to the offer made by the master masons' committee of Liverpool and Birkenhead on the 1st of May last, viz., 7½d. per hour for fifty-five hours per week in summer, or 1*l.* 14s. 4½d.; 8d. per hour for forty-six hours per week in winter, or 1*l.* 10s. 8d. per week. The secretary to the meeting was requested to communicate this decision to the operatives' association. A counter motion, that no advance be made, but that the wages remain at 33s. per week, as at present, was lost by a majority of ten to five.

*Oldham.*—The masons who have been out on strike for an advance of 3s. per week, have decided to go in on the terms offered by the masters, 1s. 6d. per week advance at once, and another advance of a similar amount on the 1st of August. When the whole of the concession has been obtained by them, the men's wages will be 33s. per week.

*Darlington.*—A dispute has been for some time pending between the Darlington joiners and their employers. The men asked for fifty hours per week at 7½d. per hour, the previous rate being 6¾d. The advance was given by a few firms, but the majority declined it, hence a large number of men have struck for the advance. The building trade is just now very active in Darlington. As the masters have previously offered 7¼d., it is thought that the difficulty, considering the small difference which now exists, will be got over.

*Wigan.*—An arrangement has been entered into between the carpenters and joiners and their employers, whereby the wages of the men are to be advanced from 6½d. to 7d. per hour all the year round, 55 hours to constitute a week's work in the summer, and 47½ for the three winter months from 12th of November to 2nd of February. For the first four hours' overtime 8d. per hour is to be paid, and afterwards time and a half is to be allowed. The working rules at present in force are to be accepted with the foregoing alterations, which are to date from the 1st of June.

*Greenock.*—The building trade labourers of Greenock and the district have issued to their employers a demand for an advance of ½d. per hour, on and after the 5th proximo.

*The Brickmakers' Strike.*—At the Clerkenwell Police-court Walter Connor, a brickmaker and moulder, of 9, Victoria-grove, High-street, Stoke Newington, appeared before Mr. Cooke to answer the complaint of Messrs. Stroud, the well-known brickmakers, of Islington, Brentford, and elsewhere, for having entered into a contract of service with them, and, having entered upon such service, did, on the 28th ult., unlawfully neglect and refuse, and has ever since neglected and refused, to fulfil the said contract, contrary to the statute, &c. After evidence had been taken, Mr. Cooke delivered judgment. He said:—

This is a summons taken out by Messrs. Stroud, brickmakers, under the 4th section of the Masters and Servants Act, against Walter Connor, whom they allege to have employed as a labourer, to first dig up material, and then mould the same into bricks. The facts lie in a small compass. By the custom of the trade, a few days before Christmas in each year, the employer and the employed meet together, and without any written, or even verbal, contract, a sum of a few shillings is paid by the former to the latter, which represents the rate of amount, which varies each season, to be paid for each quantity of bricks made through the season. The person so employed then forms a gang of men, who are engaged, paid, and, if necessary, discharged by him. This gang work at digging the materials until the spring and following three or four months, and then mould what has been dug during the winter months. It seems that the defendant, wishing to vary the amount per 1,000 of bricks, declined, with his gang, to continue work unless paid a higher price, and thence this summons was taken out. The law upon this matter is not difficult. I take it to constitute the relationship of master and servant there must be a personal contract to serve, and not merely a contract to do specific work. If there be a contract to serve, the fact of remuneration being governed by the labour performed, as payment by time or piecework, will not govern such relationship. The three essentials appear to be exclusive service, payment of wages, and a contract between the parties. The application of this law to the facts in this case are not free from difficulty, inasmuch as the judges, upon facts very similar, have differed very much in opinion.

Mr. Cooke dismissed the complaint, but said he would be prepared to state a case if called upon to do so. Mr. Mead said he would ask for a case, and would give the proper notices and sureties in time.

## SEWAGE MATTERS.

*Irrigation at Croydon.*—It appears that the directors of the Croydon Irrigation and Farming Company propose to wind up the concern, not as the result of any failure in the system of sewage utilisation there carried out, but in consequence of the enormous rent demanded by the Croydon Local Board of Health. The directors had "an anxious and protracted negotiation" with the Board, in order to get a reduction of 1,600*l.* in the annual rent of 3,600*l.* payable, but without success. The directors say they exceedingly regret that the Local Board are so hard and exacting, considering the large amount which the shareholders of this company have spent, and which has had the effect of benefiting the ratepayers of the town of Croydon. An approximate statement of the company's assets and liabilities shows an estimated balance of 1,434*l.* returnable to shareholders on the winding-up of the company, after a fine of 500*l.* to the Local Board on the surrender of the lease has been paid.

*Sewage Irrigation at Brackley.*—Mr. Hope, of the Romford Sewage Farm, has issued a long report respecting the sewage irrigation of Brackley, in which he states that with regard to the various methods that have been suggested for purifying sewage, all have failed with the one exception of its application to land by surface irrigation. Pumping is evidently a thing which, in the case of very small towns, must be avoided if it is possible to do so, because the expense of wages and certain other items is out of all proportion in a small place. Brackley is favourably situated in this respect as compared with many other places; but, in Mr. Hope's judgment, after a most careful inspection of the locality, there is only one place where the sewage can be applied by gravitation, and it is upon what was roughly estimated at about 47 acres of land on the right of the Buckingham-road, before passing over the river. When (at a cost probably of 2,000*l.*) the operations have been carried out, the inhabitants of Brackley will have entirely freed themselves for ever from all difficulties as regarded sewage, and he contended that the sewage farm would be a profitable speculation.

*Cleckheaton Drainage.*—At a special gathering of the Board of Health at Cleckheaton, the following resolution, moved by Mr. Arthur Anderton, was carried:—"That we at once advertise for tenders for the construction of the Moorbottom, Northgate, Mocorend, Church-street, Whitechapel-lane, and Whitcliffe drains; and that we borrow the requisite amount of money from the Public Works Loan Commissioners, or from any other available source, at the rate of interest not exceeding 4½ per cent. per annum."

*State of the Norwich Sewerage Works.*—Norwich spent 120,000*l.* about the sewerage works; then between 3,000*l.* and 4,000*l.*; and at the last council meeting the mayor said he was afraid another 15,000*l.* or 20,000*l.* might be necessary. The city engineer has reported upon the new sewers, and it seems that one section is very defective,—"in a very bad state,"—"a great quantity of water finds its way into the sewer through the cracks and defective places in the brickwork." It was impossible for the engineer, Mr. Thwaites, to give an estimate of the cost of the works required; but there was no alternative but to go forward with them, let the cost be what it may.

*Disposal of Sewage.*—A Parliamentary return just issued shows the progress of the local authorities in dealing with the sewage of towns. In forty-two instances the sewage is disposed of by means of a farm. Fifty-four localities have adopted filtration, and thirty have used some method of precipitation. It would, therefore, appear that filtration is more generally acceptable than any other method, and that precipitation has the fewest instances of practical operation. Among the sewage farms complaints in regard to the "effluent water" are reported to have arisen in only three cases. Filtration has not been so successful, complaints having been made in twelve instances. Towns should seek, in the first place, to get rid of their sewage inoffensively, profit being held as a secondary consideration, though it seems grievous, and cannot be finally safe to make sheer waste of the excreta of towns. The return, however, seems to show that sewage can be got rid of decently by known and practised methods. We may rescue our rivers from being made foul and unwholesome; and if we wish to encourage this process, we must be careful not to ask too much.

## CHURCH-BUILDING NEWS.

*Oldham.*—St. Andrew's Church has been consecrated by the Bishop of Manchester. Its dimensions are as follows:—Nave, 70 ft. by 28 ft.; aisles, 12 ft. 6 in. wide; chancel, 22 ft. long and the same width as the nave; south transept, 28 ft. by 16 ft.; tower, 9 ft. square inside placed in the angle between vestry and north aisle. The organ-chamber and vestry are one on each side of chancel. The roofs are open to the apex, and are plastered between the principals, the height of nave and chancel being the same, viz., 47 ft. 6 in. The building is of brick with stone dressings. The tower has only been carried high enough to form a porch over the entrance; but it is to be completed as soon as the funds will permit. The total cost of the building as now erected is about 4,400*l.*, a large amount being expended in foundations, owing to the awkwardness of the site. The pulpit, reading-desk, font, and tiling of chancel, were gifts from various friends. The architect was Mr. John Lowe, of Manchester, and the work was nearly all done by Oldham tradesmen.

*Atlow.*—The chief stone of a new church has been laid here on the festival of SS. Philip and James, to whom it is to be dedicated. The old church was a ruin of old limestone and sandstone, the walls out of the perpendicular and dangerous. The ceiling had partly fallen in, and the damp of the side-walls and floor was so great as to render it very unpleasant for the parishioners to remain in the building. On being advised of these matters, the Bishop of Lichfield granted a licence for the use of the school-room in the parish for the offices of religion. The architects of the new edifice are Messrs. Stevens & Robinson, of Derby. Mr. Benjamin Buxton, of Mayfield, is the contractor. The amount of the original contract was 642*l.* for walls, roofs, wood flooring and seating, and to this has been added 30*l.* for the chancel-arch, &c. The pulpit, font, communion-table and rails, encaustic tiling for the chancel and aisles, are not included in the contract, and the architects' and legal expenses have to be provided for, so that an additional sum of 100*l.* is needed to complete the work.

*Crowthorne.*—The church of St. John Baptist, Crowthorne, has been consecrated. Crowthorne is in close proximity to Wellington College, and the new church has been built as a chapel of ease to St. Michael's Church, Sandhurst, which is about three miles distant. The new church was designed by Mr. Arthur Blomfield, the cost thus far being 2,000*l.* A chancel is still required, and this will cost about 800*l.* At present there is no pulpit, but a brass eagle lectern has been presented by the Rev. A Carr, of Wellington College. The building is composed principally of red brick, with Bath-stone dressings, and in the interior there are three arches on either side of the nave, composed of red and black bricks. The arches rest on six pillars, surmounted with stone caps. The seats are open.

*Wilstead.*—The church of this parish, having for some months past been undergoing restoration, has been re-consecrated by the bishop of the diocese. The works just completed consist of a new chancel, with a vestry and organ-chamber on the north side; a new chancel arch, and a porch to the south door. There is also a new pulpit of Ham Hill stone. The whole church has been re-floored, and seated with open benches of stained and varnished deal, and the stonework throughout has been cleaned and repaired. The font has also been cleaned and removed to its original position near to the south door, as well as elevated upon steps and fitted with an ornamental cover. Porritt's underground stove has been adopted for warming. The new work in the chancel is built of the old materials, and faced like the rest of the church with local stone of a brown colour. The dressings are of Ancaster stone. The chancel is furnished with choir-stalls and desks of oak, and there is also a low chancel-screen of the same material. The general works have been carried out by Mr. Osborn, of St. Neots, from the drawings of Mr. Blomfield. The cost has been mainly defrayed by Lord John Thynne, who, besides contributing largely to the general restoration fund, has added as his own special offerings an east window, representing the Ascension, and a reredos, the centre panel of which, above the altar, represents the Last Supper, whilst the side panels (with special reference to the dedication of the church to All Saints) represents saints departed of all nations, ages, and classes, waiting in faith and patience for the coming of our Lord. The east window and the reredos were both designed by Messrs. Clayton & Bell. Messrs. Powell, of Whitefriars, executed the work on opaque glass, in a species of mosaic known as "opus sectile."

*Lincoln.*—The new church of St. Martin has been consecrated and opened for Divine service. It is in the Early Decorated style, and capable of holding 1,000, although at present only seated for 650. The church is erected on what was known as "Burton's Show-paddock," in Newland. It consists of a nave, with north and south aisles, chancel, vestry, organ-chamber, south porch, and a tower at the south-east angle of the church. In the clearstory each bay is pierced with three-light windows, with traceried heads and detached shafts, having moulded caps and bases. Under the clearstory windows runs a braiding of gas in the evenings, from end to end of each side of the nave, round the pillars there are three light burners, whilst the chancel has four brass standards, and the altar two brass pyramids of burners. The aisle windows have three lights, with geometric traceried heads, moulded jambs, and carved caps. The chancel has an apsidal termination, is lighted by seven single-light windows, with cusped heads, having both internal and external columns, carved caps and bases. The ground floor of the tower forms the organ-chamber, and also one of the entrances to the church. The nave architecture consists of five bays on each side, having circular piers and responds, with moulded and carved caps and bases, the arches being double chamfered. The nave has an open-timbered roof, the principals having curvilinear ribs, with trefoiled blade. The contract for the building was taken by Mr. Geo. Johnson, of Nottingham, Mr. W. Goodbarn being clerk of works, and Mr. Beckett, of Nottingham, the architect.

*March.*—A public appeal has been made for funds to carry out the proposed restoration of the old parish church of March, dedicated to St. Wendreda. A thorough restoration of the entire fabric is imperatively necessary. A subscription have just been started, and already nearly 1,000*l.* have been promised. The work, it is estimated, will cost 3,500*l.*

*Alton.*—The committee for building the proposed new district church of All Saints, have just issued a statement of facts, calling the attention of the parishioners and inhabitants of Alton to the great need of further church accommodation at the extreme western end of the town, called New Town, which is nearly three-quarters of a mile from the mother-church, and already contains about 88 houses. The new district church, which they propose to erect, will be built to seat above 300 persons, at a cost (exclusive of the site, which has been given by one of the committee), of 2,000*l.* Subscriptions have been already promised, amounting to 1,064*l.*

*Woodley* (*Sonning Parish, Oxford and Berks*).—The church of St. John the Evangelist, Woodley, has been consecrated. Mr. H. Woodyer, of Grafham, near Guildford, was the architect. The style is Transition. The material is flint and stone. The edifice consists of a nave, with one aisle, a chancel, organ-chamber, and vestry. Triple arches between the nave and the chancel are supported on columns of dark Forest of Dean stone, and filled in with ornamental iron-work; in the centre is suspended a decorated cross. There is a recessed and sculptured reredos of Caen stone, combined with English and Italian alabaster and marble, representing the Crucifixion in the centre compartment; on one side, the Centurion and Roman soldiers, on the other, Joseph of Arimathæa and Nicodemus. This is the work of Mr. Nicholl, of London. The painted east window by Messrs. Hardman, of Birmingham, represents the Ascension, in the centre; on one side, the Last Supper, with St. John leaning on the breast of our Lord; on the other side, the Angel in the Revelation showing St. John the heavenly city. There is an arch into the organ-chamber, and oak screen beneath it; but the organ still remains to be obtained. There are three bells, from Messrs. Mears, London, and these, by machinery made by Mr. G. Belcher, will be rung in the chamber above the porch. The sittings throughout the church will be free and unappropriated. The churchyard has been fenced in by a brick and flint wall against the road, and an iron paling round the rest of the inclosure. The works have been carried out by Messrs. Green, and Cox & Brown, of Sonning, and Messrs. Wheeler, of Reading. The clerk of the works was Mr. Cooper, of Croydon. The late Mr. Robert Palmer, of Sonning, gave 6,000*l.* towards restoring and endowing this church. About thirty years ago he built All Saints' Church in the same parish, and twenty years ago he restored the parish church, which took a large sum. He paid nearly the whole cost of Earleigh Church, all in Sonning parish, besides supplying them all with schools, and erecting six almshouses. Mr. Palmer died last December, and left 5,000*l.* to the Berkshire Hospital. Mr. Richard Palmer, his brother, now holds the estate, and will provide everything that is necessary for finishing and endowing Woodley Church. The building and everything connected with it cost 4,600*l.* without the ground, which is close to Woodley-green.

*Withycombe, near Exeter.*—The church of St. John the Evangelist, erected some eight or nine years ago from the designs of Mr. E. Ashworth, of this city, has just had several additions made to its chancel. A new reredos has been erected, and a large painted east window put in. The reredos is mainly of fine Painswick stone, and consists of an arcading of fine bays, springing from polished Devonshire marble columns and carved capitals. The bases of these columns rest upon a broad plinth, 2 ft. 9 in. in height. The spandrels between the arches are covered with diaper of a type similar in detail to some of the early diaper over the wall arcading of the chapter-house at Westminster Abbey. The whole is surmounted by a moulded and carved cornice, the apex of each gable over the arcading being capped by an ornamental finial. The foliage used in the carved work is all of a scriptural and symbolical character, and represents the vine, ivy, oak, passion-flower, apple, trefoil, &c. The extreme height of the structure is 9 ft. 9 in., and the entire width, 22 ft. The reredos, the gift of Mrs. Baldock, has been carried out by Messrs. H. & F. Burridge, of Exmouth. The carving is the work of Mr. Harry Hems, of this city. The marble work has been supplied by Messrs. J. & E. Goad, of Plymouth, and the painted decoration is by Mr. Hudson, of London. The east window, immediately above the reredos, has also been beautified by the insertion of painted glass. The window is divided into five lights, and the subject is the Ascension. The form of our Lord occupies the central light, and is shown in the act of ascending in a vesica of glory, whilst immediately beneath him are angels bearing scrolls. In the other four lights are shown the Virgin Mary and the eleven apostles, in groups of three figures in each light. In the centre of the tracery, in the upper part of the window is our Lord in the act of pronouncing the Benediction, also the *Agnus Dei*, and ministering angels. The lowermost panels of the window are filled in with subjects illustrative of various incidents in connexion with our Lord's re-appearance after his resurrection. The window has been made by Messrs. Clayton & Bell, at a cost of 200*l.*

*Fordham* (*Cambs.*).—The church here has been further restored. An organ-chamber has been built, the clearstory windows and battlements restored, the nave gable and chancel arch rebuilt, and a new window inserted, different in size and shape from the old one, which had been long closed up. This has been filled with stained glass, at the expense of Mr. Winch, of Petersham, in memory of his wife. The subject is an angel, flying in the midst of heaven, holding the everlasting Gospel, &c., and was executed by Mr. Constable, of Cambridge. The west window has been restored, and filled with stained glass, and the roof and inner walls and tower arch restored, at a cost of about 350*l.* About 300*l.* of this sum was given by the Rev. Tansley Hall, rector of Boylestone. The subject of the window is the Transfiguration, as given by St. Luke, and has been executed by Messrs. Clayton & Bell. A private chapel, forming an aisle on the south side of the chancel, to correspond with the organ chamber, has been built by the lay rector, Mr. W. Dunn Gardner, with a view to retain the old symmetry of the church. This, and the further restoration of the windows, and walls, &c., of the chancel cost about 650*l.* In making these alterations and repairs, some early English work was discovered, sadly mutilated, probably done, or rather undone, in the time of the rebellion. Many of the old stones were found in different parts of the building undergoing restoration. They consist of three sedilia, graduated as if for a priest, deacon, and sub-deacon, and two piscinæ. Sufficient of the old work remained to enable the architect to carry out the restoration in imitation of the old work. This cost about 40*l.* The arches of the piscinæ are adorned with the tooth ornament. There is a stained glass window, placed in 1873, at the expense of Mr. Robert English, in memory of his daughter, executed by Mr. Constable. The subjects depicted are, the Annunciation, Presentation, and Adoration. This window is placed at the south-east end of the south aisle.

## ROMAN CATHOLIC CHURCH BUILDING NEWS.

*London.*—The foundation-stone of a new church has been laid by Archbishop Manning in Great Prescott-street, Tower-hill. After the religious ceremonial a meeting was held to promote the erection of the proposed building, at which the Earl of Denbigh presided. A letter of apology for non-attendance and of sympathy for the undertaking from the Duke of Norfolk was read by the chairman. The principal speakers were Archbishop Manning, the Earl of Denbigh, and the Right Hon. William Monsell. There were present the Marchioness of Lothian, the Countess of Denbigh, the Lady Herbert of Lea, the Hon. Mrs. Pereira, &c. The new church is destined for a Roman Catholic population of over 6,000.

*Oxford.*—The Roman Catholic Bishop of Birmingham (Dr. Ullathorne), assisted by a large number of Roman Catholic priests, has performed the ceremony of blessing the foundation-stone of what is intended to be a spacious chapel, for the use of the Roman Catholics of Oxford. The site of the new building is the west side of St. Giles's-road, within about a hundred yards of the Radcliffe Infirmary. By the removal of three houses fronting the street a large piece of ground is opened, upon which the new building, which is to be dedicated to St. Aloysius, has already been commenced. The church will, when fully completed, consist of a nave, transept, sanctuary, and side chapels, with a tower and spire. It is only contemplated at present to erect about half the building. This is the sanctuary, part of the nave, the transept, and side chapels. Round the sanctuary will run a small aisle, which it is proposed shall eventually open into five small chapels. The ordinary position of a church is exactly reversed here. The altar will be at the west end, and east of the transept will be three chapels, one filling each arch of the nave, which in their turn will be surrounded by three more; so that, in fact, there will be six chapels occupying what would in most churches be considered as the south aisle. The material to be used is Bath stone throughout, and the internal carving will be rich. The exterior of the building will be equally imposing, the height of the ridge of the roof being 80 feet. Accommodation will now be provided for about 400 sittings, and when fully completed 800 will be the number of seats. The entire cost of that portion about to be commenced is defrayed by the legacy of a lady whose name is not mentioned.

*Stokesley.*—The new church of St. Joseph has been opened for Divine service. It is situated at the east end of Stokesley, behind the Spring Field Villas, and near the Stockton and Middlesbro' road ends. The church and presbytery have been built at a cost of 1,500*l.* The donor who has presented this gift wishes his name to remain unknown. The architects were Messrs. Goldie & Child, of Kensington, and Mr. J. F. Craggs, of Stockton, was the builder.

## SCHOOL-BUILDING NEWS.

*Malton.*—The Bower memorial schools at Norton have been opened. The building is Gothic in style, and has been erected from the design of Mr. Smith (Smith & Broderick), of Hull, at a cost of over 1,300*l.* The site cost a further sum of 450*l.* The building is divided into three separate schools,—for boys, girls, and infants; the largest of which is 76 ft. by 18 ft., and the smallest 58 ft. by 18 ft., in the interior, and the three will afford accommodation for about 600 scholars. Towards the cost of the schools Government has given a grant of 500*l.*, and the rest has been partly raised by subscription, the whole of the cost not yet being defrayed. The contracts for the erection of the building were in the hands of Mr. George Oldfield, builder, and Mr. Samuel Brotherick, joiner, of Norton; and the whole of the plumbers' work has been done by Messrs. R. & J. Read, of Malton.

*Ipswich.*—The new Board schools are approaching completion, and, according to the *Suffolk Chronicle*, are as follow:—Wherstead-road, Argyle-street, Trinity-street, and California. The two first-named are the large schools, each being designed for the three classes,—boys, girls, and infants. Wherstead-road School is the largest school, intended to accommodate 800 children of all classes, about 300 of which are infants, the remainder of the space being equally divided between boys and girls. Mr. Butterworth's design was selected by the Board as the best, and the contract was given to Messrs. E. & E. C. Gibbons. The work has been under the superintendence of Mr. Oliver Gibbons. The site is on a portion of the meadow on the west side of the Wherstead-road, near Messrs. Bennett's brickyard. The schools thus face Bath-street. The front elevation consists of three gables corresponding to the three schools, and the boys' and girls' schools, which stand at the north and south respectively, come within 10 ft. of the road, and each contains a three-light Gothic-headed window, the red brick gables being relieved by the introduction of black bricks. The centre gable is recessed other 10 ft., from which a porch, 10 ft. by 9 ft., projects. Above this are two small Gothic windows. The total frontage to the Wherstead-road is 136 ft., of which 116 ft. are occupied by the schools. They are enclosed from the road by a dwarf wall and iron fencing, with five entrances and ornamental piers. The boys' and girls' schools are fac-similes of one another. The principal schools are L shaped, the long leg of the L being 55 ft. by 20 ft., and the short one 21 ft. by 20 ft., an arrangement which is thought to be advantageous the master or mistress being placed at the corner. The desks, to accommodate 150, are arranged in three rows, each a little higher than the other, on the outer side of the long leg of the L and the inner side of the short leg. The rooms are both light and lofty, the average height being 19 ft. The angle of the L is in each case filled up by a class-room, 20 ft. square, and fitted with a gallery, accommodating fifty. At the back of the principal schools is another class-room in each case, with cloak-room, lavatory, porch, &c. The schools are warmed with hot air, by an arrangement of stoves, the invention and patent of Messrs. Wright & Co., of Rotherham, as to which Sir William Armstrong,

president of the Society of Engineers, has made some flattering remarks. The ventilation of the schools is provided for by Arnott's and Sheringham's ventilators; and the walls are hollow, to secure the better ventilation. The casements in the lantern of the infants' school can be opened and closed simultaneously, and the opening regulated as desired by an ingenious patented contrivance. The walls are dadoed 4 ft. up, and the remainder rough stuccoed and blocked out. From the centre of the building rises a bell-turret and spire 70 ft. in height; the turret being octagonal. The spire is encased with lead. The schools altogether occupy something like 100 rods of ground, of which about forty are occupied by the buildings, the remainder being divided into two playgrounds. The whole of the playground is enclosed by a wall 6 ft. high. The total cost is about 3,600*l.*——The Argyle-street schools have been turned out by the same contractors, at a cost of from 2,600*l.* to 2,700*l.*, the architect being Mr. H. M. Eyton. The appearance of the front is monotonous, owing to the absence of entrances, which are at the side. In the centre gable is a three-lighted window, the heads of the lights being cut off. Surmounting this part of the building is the bell-tower, octagonal in shape, of brick and stone, the spire being supported by eight columns of Mansfield stone, two of which run partially down the front of the gable, and are supported by a stone corbel. Springing from the columns are small trefoil arches, and the spire is relieved by small gablets. The windows along the rest of the front are all simply square windows, with the top corners rounded off, the top part of the arches being filled in with ornamental brickwork. Like the Wherstead-road school, the buildings are in three blocks, the infants' school being in the centre, the girls' and boys' on the north and and south side. Nearest the road in the infant school is a class-room, 30 ft. by 16 ft., behind which is the infant school-room proper, 30 ft. by 50 ft., which is fitted with a gallery to accommodate 120 infants, and two groups of three desks, which will accommodate 42 children. At the back of this school is another class-room, 18 ft. by 17 ft. 6 in., which will hold 44 infants, the total accommodation for infants being somewhere about 200. The boys' schoolroom is, like the Wherstead-road school, of an L shape, being 66 ft. by 20 ft. in the long leg, and 19 ft. by 20 ft. in the shorter; and in addition there are two class-rooms, 18 ft. by 16 ft. The girls' room is oblong, will accommodate 126 girls, and in addition there are class-rooms of the same capacity as those on the boys' side. All three schools are lighted by lanterns in the roof. The rooms have all plain open roofs, and the walls are not plastered or dadoed, but simply coloured. The warming is by Bacon's patent, a system of small hot-water pipes, which run along where the skirting generally is, the place of skirting being taken by a grating. The desks with which the school will be fitted will be of American birch, and the woodwork inside the building is stained and varnished deal.——Trinity-street School is the name by which the infant schools in St. Clement's have been known by the Board, though the street is named by the Local Board, Olive-street. The buildings are recessed from the road about 10 ft. The main room is 60 ft. by 20 ft. and there are two class-rooms each 18 ft. by 20 ft. The entrance is by a porch and two lobbies, which are paved with Staffordshire tiles. The inside work is stained and varnished, and the walls will be coloured a light grey tint. The warming is done by means of two stoves open to the main room, with hot plates at the back to warm the class-rooms, and there is an arrangement by which the foul air from the room is drawn off under the floor into the fire. The building has also a turret or spire; the turret is octagonal in shape, and the spire, which is covered with zinc, is relieved by small gablets. There is a playground attached, 83 ft. by 48 ft. The design for the schools was that of Mr. A. Hubert, and Mr. W. G. Cunnold was the contractor; the total cost, including extras, will be about 737*l.*——California Schools are from the designs of Mr. James Butterworth, Mr. Henry Luff being the contractor. The schools are built on a site on the left side of Spring-road leaving the town, and consist of three principal rooms. The general room, which is 40 ft. by 24 ft., and a class-room at the back 20 ft. by 16 ft., compose the main building, while another class-room for the younger infants forms a wing. The general room will be fitted with a gallery, and there are two groups of desks for those children who are sufficiently advanced to take writing lessons. The rooms are all lofty, and well lighted and ventilated, and warming apparatus similar to that in the Wherstead-road schools has been adopted.

*Newcastle.*—The plans for the new high school which have been sent in for competition, have been on private view. The following are the local competitors:—Messrs. Lewis & Son, Messrs. Scrivener & Son, Messrs. R. Chapman & John Snape (Sandbach), Mr. George Rhodes, jun., and Mr. John Birch. Plans have also been sent in by Mr. W. H. Noble, Sparkbrook, Birmingham; Mr. J. S. Moye, London; Mr. T. W. Chalmers, Stafford; and Mr. J. Candall, Leamington.

## VARIORUM.

"REPORT of the Committee on the Treatment and Utilisation of Sewage, re-appointed at Edinburgh, 1871. London: printed by Taylor & Francis, Fleet-street." This is a pamphlet reprinted from the report of the 42nd meeting of the British Association for the Advancement of Science, held at Brighton in August last. It contains the results of inquiries into various modes of dealing with sewage. Among the methods brought to the notice of the committee, that of treating sewage by Messrs. Weare's process at Stoke Union Workhouse, of which we have already spoken; the precipitation and conversion of the deposited matters into cement at Ealing; and the system of intermittent downward filtration at Merthyr Tydfil, have appeared most important; and they have accordingly been investigated, the results appearing in this report. A process known as Whitthread's patent has been also examined by experiment on a sufficiently large scale, and the result is given. The committee having reported upon the sewage-farms at Tunbridge Wells and Earlswood at the last meeting of the Association, it was thought advisable to inspect them again, as the works were incomplete when the committee last visited them. The observations at Breton's Farm had been proceeded with uninterruptedly, and are described. These investigations have now extended over a period of more than two years; and the experience thus gained from the *continuous* records of the flow, and sampling for analysis, of the sewage and effluent water, of the application of the sewage to the various crops, of the results of such application upon the produce grown, and the degree of purification effected in the sewage, will, it is hoped, prove valuable to sewer authorities and others interested in the question of sewage farming. Being fully impressed with the importance of these investigations, the committee paid special attention to render them as complete as possible; but it was felt that to perfect them, especially as regards the important branch relating to the effect of the application of sewage upon the crops grown, it would be necessary to continue them, for at least some months longer.——*Leisure Hour* says,—"Railways are well represented in the Legislature. In the House of Lords there are 48, and in the House of Commons 122 directors, many of whom are on the boards of two companies, while some share in the directorate of three or four companies. There are besides many of the other members of both Houses who are extensive shareholders, and are thus interested. With such an army of supporters the companies have little difficulty in securing the success of the measures brought forward in their interest, while at the same time it is not so easy to carry great measures of reform in the public favour."

## Miscellanea.

**The Terrible Bridge Accident in Illinois.** The *New York Times* in describing the occurrence says:—

"There was a sharp, quick crash, a heavy rumbling, and a prolonged, soul-rending shriek from 500 beings. The main western stringer of the north span of the bridge broke like a reed, tipping 300 persons into the stream, and falling 50 ft. with crushing weight upon them. The fall dislodged the stays from the abutments. The shock ran along the whole length of the bridge like a flash of electricity, and span after span was drawn from the piers and sank to the water's surface, till the whole five hung like immense bags holding a bruised, bleeding, frightened, and frantic mass of men, women, children, and horses."

There were stretchers still clinging to the abutments which were not loosened by the fall, and these some grasped to save their lives.

**Value of Land in 1688 and 1873.**—The annual value of land in England and Wales is estimated to have risen six times since 1688. Mr. John Macdonnel, in his recently published book on the land question, tells us so, and that this rise has been going on of late is proved by a glance at the property-tax returns, which show that between 1853 and 1870 the annual value of the rent-bearing area of the United Kingdom increased from 47,559,000*l.* to 56,540,000*l.* At the same time, even during the present century, there have been great fluctuations in rents. During the French wars they rose enormously. After the peace they fell 10 to 33 per cent. Under the influence of the Corn Laws they again rose, to decline shortly after those measures had been repealed. From 1852 to the present time they have steadily risen. As to urban land, a square foot in Victoria-street lets for 1*l.* sterling. A piece of ground in Holborn bought in 1552 for 160*l.* now yields 5,000*l.* a year. A wharf in Castle Baynard bought for 2,000*l.* in 1670 lately realised 110,000*l.* An acre of land in South Kensington, which was sold for 3,200*l.* in 1852, fetched 23,350*l.* in 1860. We are told that the price of an acre of the most valuable uncovered land in the City of London after the Great Fire in 1660 was 30,000*l.*, or about one-third of the value when built upon. At the present time the highest rate for such unbuilt land may be taken at 1,000,000*l.* an acre, and such value constitutes fully three-fourths of the value of the property after it has buildings upon it.—*Land and Water.*

**Building in Vienna.**—Prices of house-property have been steadily on the rise, and in more than one instance the builder of a single sumptuous mansion in one of the "Rings" has made a profit of seven or eight thousand pounds in the course of a year or two. But to any one who knew the Vienna of half a dozen years since it has been a standing puzzle whence the population came who pay the fancy rents for houses and apartments in the new quarters which are springing up everywhere. The recent panic goes some way to answering the question:—"Vienna was living on gambling gains, and builders were drawing bills on the expectant prosperity of the future, as English Chancellors of the Exchequer reckon—with more justice—upon the elasticity of our revenues. It was the new building companies that went with a crash the other day, threatening to bury everything else in their ruins. One or two of them came to the ground altogether. The shares of others were depreciated in four-and-twenty hours, 20, 30, 50 per cent." It is scarcely a secret that some of the best known financiers of Austria have gone so deep into stone and lime, and building operations generally, that in the event of a crash they are likely to be crippled, their great resources notwithstanding.

**The Liverpool "Underground Railway."** The entire of the tunnel between Brunswick Station and Stanhope-street, says the local *Journal*, is in working order, and the three lines of rails are laid down to St. James's Station. From that point to the end of the tunnel in Back Bold-street, the whole of the brickwork roof has been completed, with the exception of about 120 yards; but a considerable amount of blasting through the solid rock has still to be done. The contractors, however, hope to have a locomotive driven right through to Ranelagh-street before the end of July, and the tunnel opened for regular traffic before October. The line now being completed forms only part of the great scheme for connecting Cheshire with Liverpool and its docks by sub-river and sub-city tunnels. The route from where the new line branches off at Cressington Park is very direct to Manchester and the engineer of the line guarantees that the journey from Manchester shall be regularly run in about forty-five minutes, thus eclipsing the speed of the London and North-Western Railway's fastest trains. The contractors for the entire works are Messrs. Kirk & Parry, of London, and Sleaford, Lincolnshire. The immediate superintendence of every department of the station, tunnel, and line construction is entrusted to Mr. Knight, and the engineering and designs for the stations directed by Mr. Morton, C.E.

**Destruction of the Theatre in Malta.**—News of the burning of this theatre has been received in London. During the rehearsal of a new opera, one of the scenes caught fire, and in a few moments the whole of the interior of the building was in flames. The place was completely burnt out.